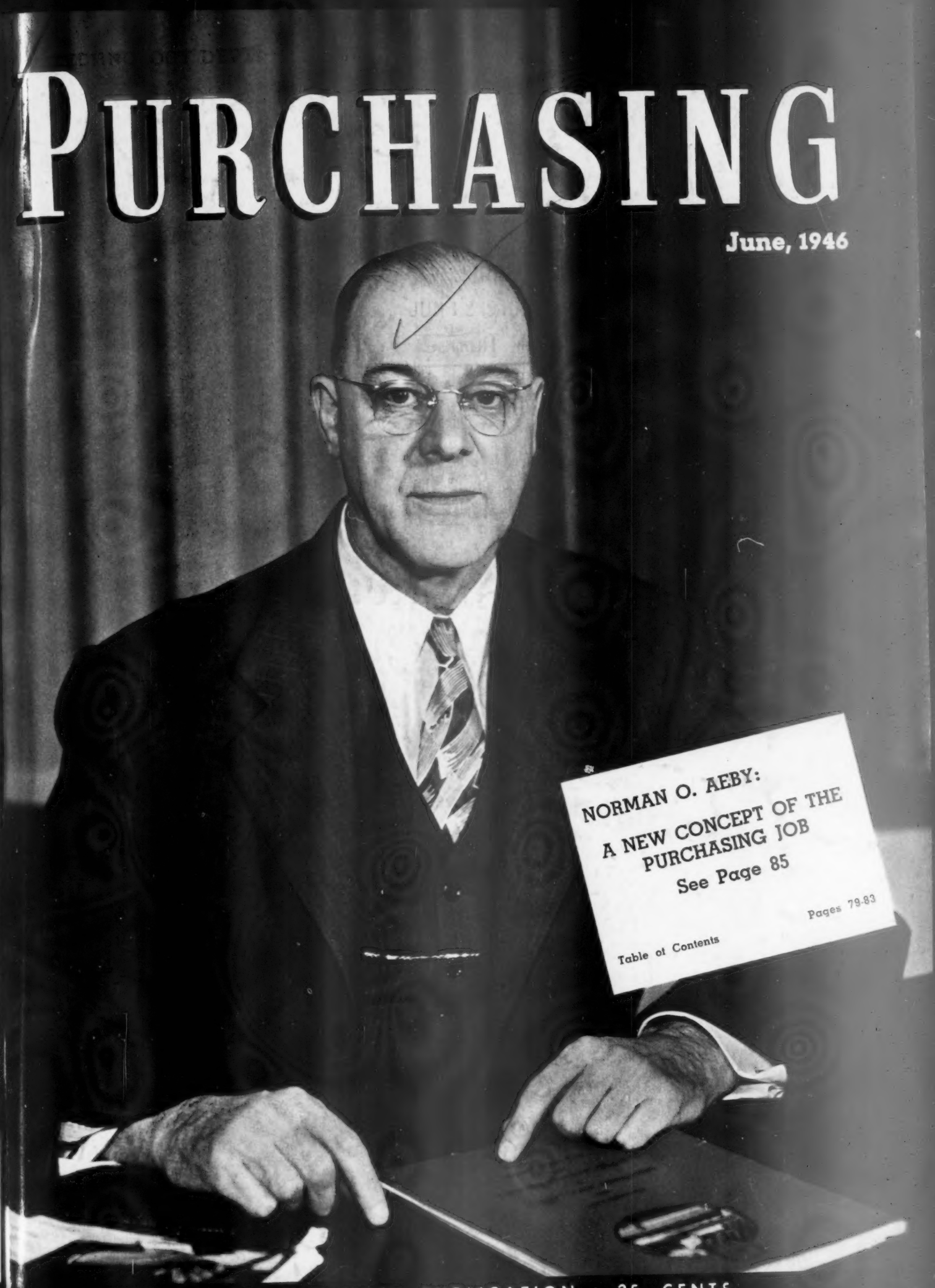
PURCHASING

June, 1946



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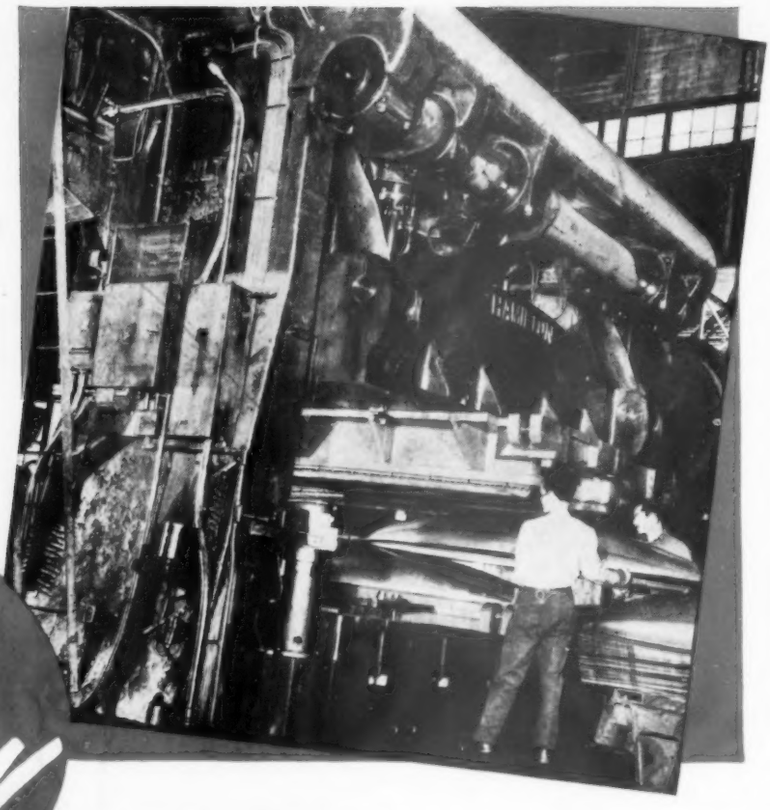

Now... HYDRAULIC OIL THAT Prevents Sludge and Rust

STOPPAGES of hydraulic mechanisms may occur at any time, and they generally come suddenly, with no apparent warning. Most stoppages are caused by: 1) *sludge,* due to oxidation of the hydraulic oil, and 2) *rust,* due to moisture that gets through ordinary oil film onto the metal parts. Rust is particularly likely to form during periods when the machine is idle.

Texaco Regal Oils (R & O) are strongly inhibited against both rust and oxidation. They stand up under high temperatures and agitation—preventing sludge formation. They "plate" the surfaces of valves, gears and other parts with a rust resisting film so that moisture does not reach metal surfaces. In addition, *Regal Oils (R & O)* will not foam. This means smooth, dependable operation.

Texaco Regal Oils (R & O) have proved themselves in service on all types of hydraulic units, from giant presses to small machine tools. One nationally famous user writes that they *". . . . have eliminated the difficulties formerly experienced with oil varnish in the hydraulic system."* Leading hydraulic equipment manufacturers use and recommend *Texaco Regal Oils (R & O).*

There is a complete line of *Texaco Regal Oils (R & O)* to meet every hydraulic machine requirement. For full information, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Regal Oils (R&O)

FOR ALL HYDRAULIC UNITS

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT STARRING JAMES MELTON WITH HIS GUEST, ED WYNN—CBS

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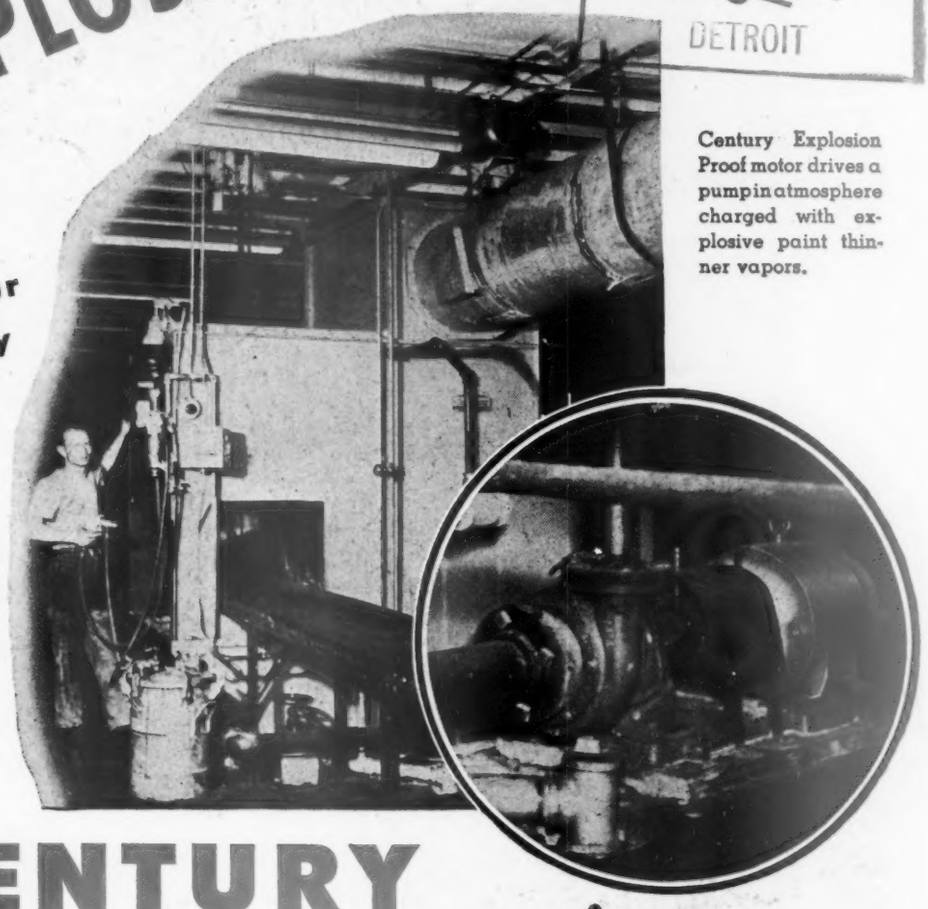
IN EXPLOSIVE ATMOSPHERES

PROTECT Your People From Injury

PROTECT Your Plant From Costly Shutdowns



Century Explosion Proof motor drives a pump in atmosphere charged with explosive paint thinner vapors.

with CENTURY EXPLOSION PROOF MOTORS

Where atmospheres are charged with such explosive mixtures as alcohols, acetone, solvent vapors, natural gas, gasoline, naphtha, grain dusts, etc., Century Explosion Proof motors will give you maximum protection against explosions and fire.

Century Explosion Proof motors are built to meet all standard operating characteristics — high torque, low torque, normal torque, multispeed. The inner frame of these motors is enclosed so that mechanical operating parts and electrical connections are completely sealed from the outside atmosphere.

A blast of cooling air is forced by large ventilating fan between the inner and outer frames. This keeps the operating temperature down and blows dust and dirt out.

Engineered to the functional characteristics of the machines they drive to assure top performance — Century motors are a vital factor in building a better product at a lower cost. Specify Century motors on all your electrically powered equipment. Built in sizes from 1/20 to 600 horsepower.

Century C MOTORS

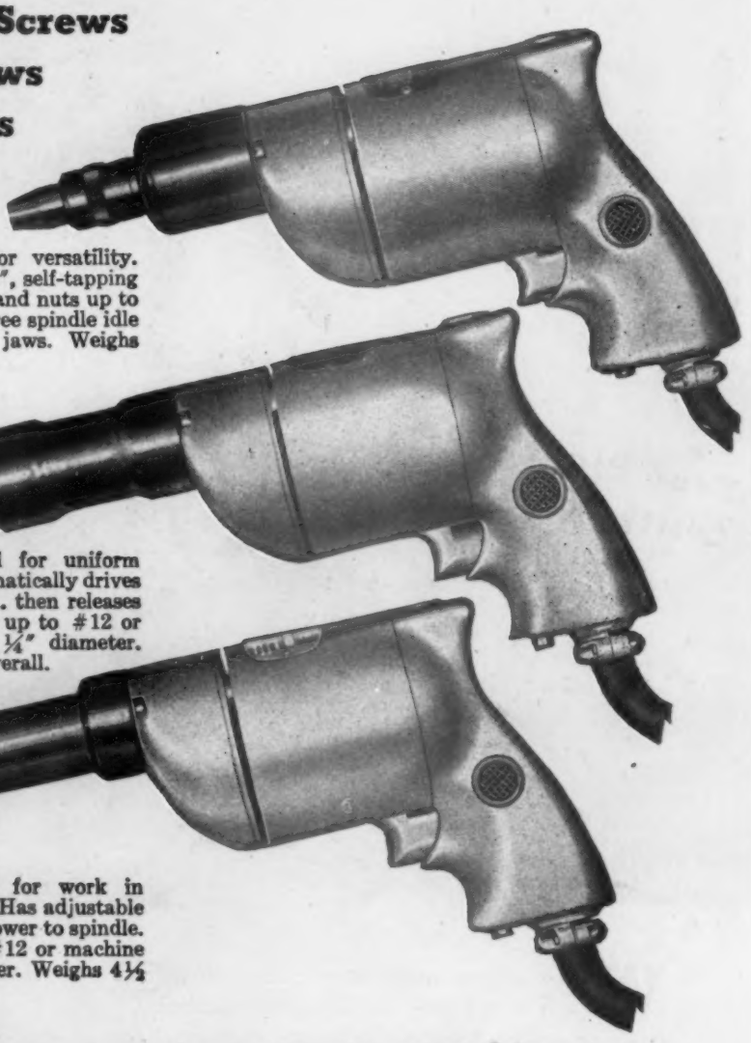
CENTURY ELECTRIC COMPANY 1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

PURCHASING, published monthly by Conover-Mast Publications, Inc. Publication Office, Orange, Conn. Editorial and Executive Offices 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3 for one year, $5 for two years in the U. S. A. Canada and Foreign $4.00. Volume 20, No. 6.

You Name it - They Drive it

- **Self-Tapping Screws**
- **Machine Screws**
- **Nuts and Bolts**
- **Wood Screws**



Positive Clutch Scrugun—Designed for versatility. Drives wood screws up to #10 x 2″, self-tapping screws up to #12, machine screws and nuts up to ¼″ diameter. Positive clutch lets free spindle idle until operating pressure engages jaws. Weighs 3½ lbs. Measures 8¾″ overall.

Adjustable Clutch Scrugun—Designed for uniform production. Adjustable clutch automatically drives every screw to uniform tension . . . then releases spindle. Drives self-tapping screws up to #12 or machine screws and nuts up to ¼″ diameter. Weighs 3¾ lbs. Measures 10¼″ overall.

90° Angle Drive Scrugun—Designed for work in close quarters and around corners. Has adjustable clutch. Angle head transmits full power to spindle. Drives self-tapping screws up to #12 or machine screws and nuts up to ¼″ diameter. Weighs 4½ lbs. Measures 10¾″ overall.

Black & Decker Electric Screw Drivers and Nut Runners speed up practically every type of assembly work . . . from the most delicate screw driving operations to driving and tightening nuts and bolts up to 1″ diameter or lag screws up to ¾″ x 6″.

Light, compact, easy to handle . . . powerful and dependable . . . these Black & Decker Power Drivers assure top-speed production with greater accuracy and uniformity . . . with a minimum of operator strain and fatigue. Right now, exceptionally heavy demand for that kind of performance keeps the supply of these tools scarce . . . but it makes sense to wait a little longer for tools that have so much to offer.

Three of these time-saving, cost-cutting assembly tools are shown on this page. For full information about all models, see your nearby Black & Decker distributor. For your free copy of our 60-page illustrated "Power Assembly Tool Data Book," write to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.

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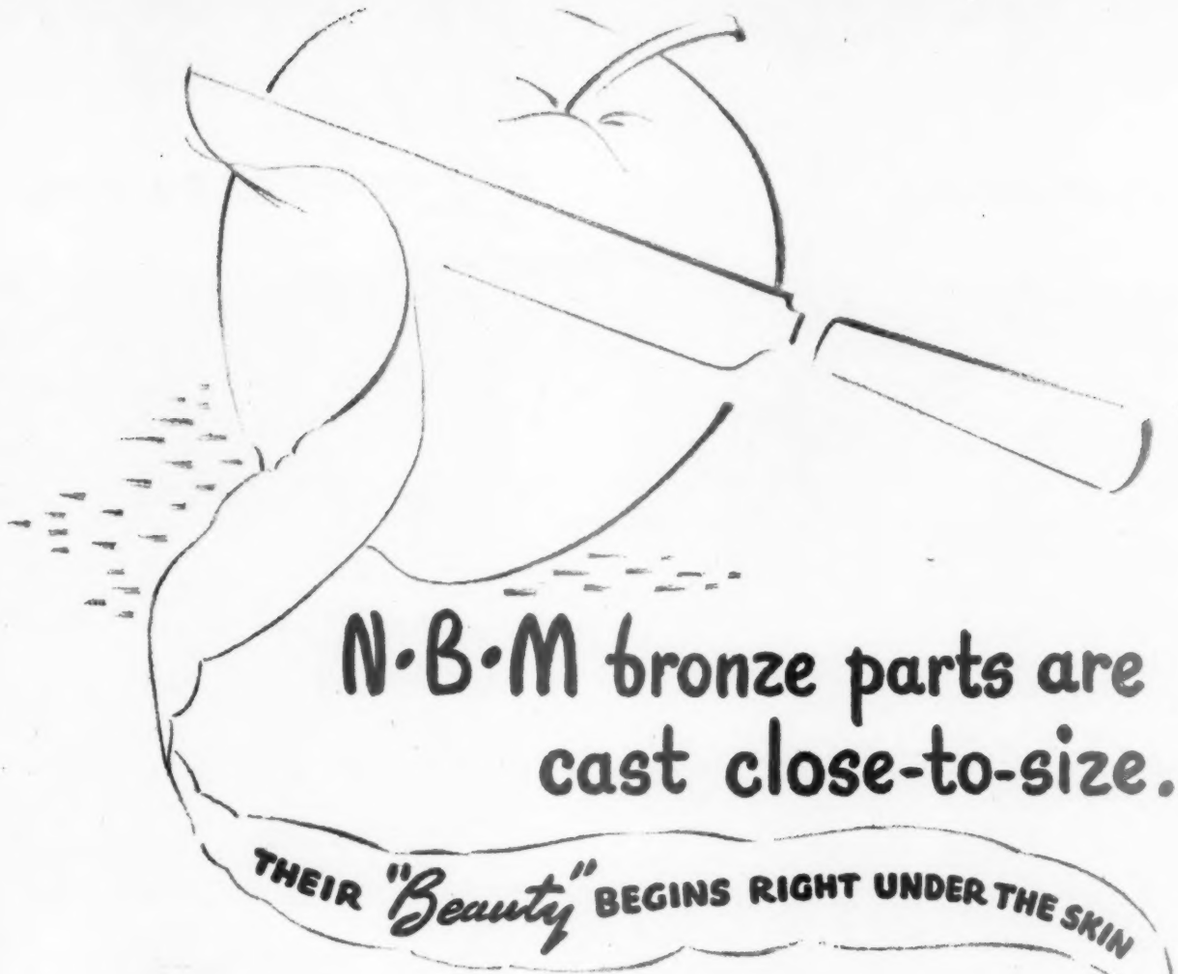
Black & Decker

PORTABLE ELECTRIC **TOOLS**



N·B·M bronze parts are cast close-to-size...

THEIR "Beauty" BEGINS RIGHT UNDER THE SKIN

They are solid and close-grained immediately under the surface. You will get more usable metal per pound of rough casting and save machining time with only a little "skin" to cut through.

This is the result of uniformity which N-B-M Bronze Parts owe to our mechanically controlled alloying and casting methods.

SAVE WASTE AND TIME...SPECIFY

N·B·M BRONZE PARTS

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INSURING A *Smooth Landing* AT 80 MPH

— *with the Red Elastic Collar that protects permanently against Thread Damage*

Again, in the huge Lockheed Constellation, ESNA Elastic Stop Nuts have provided the protection that has made them symbols of security to all aviation engineers. Every bolted connection on the tricycle landing gear, which must make smooth contact with the ground at 80 mph, has been made safe with ESNA Elastic Stop Nuts to help bring the giant ship in for a "feather light" landing. The full thread contact they provide absorbs the shock and prevents metal fatigue.

ESNA Elastic Stop Nuts are self-locking, easily removable, and reusable over and over. They protect permanently against Vibration, Corrosion, Thread Damage, Liquid Seepage and Costly Maintenance.

If fastening problems slow up your production or increase your maintenance costs, let us place the results of our experience and research at your disposal. Address: Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents in many principal cities.

ESNA
TRADE MARK

The RED ELASTIC COLLAR

— denoting an ESNA product —

. . . is threadless and permanently elastic. Every bolt — *regardless of commercial tolerances* — impresses (does not cut) its full thread contact in the Red Elastic Collar to fully grip the bolt threads. In addition, this threading action properly seats the metal threads — and eliminates all axial play between bolt and nut threads.

As a result, the Red Elastic Collar acts as a shock absorber. It dampens impact stresses—and materially reduces the shock against the metal threads that causes thread failure in conventional fasteners.

ELASTIC STOP NUTS

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ANCHOR

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SPLINE

CLINCH

GANG CHANNEL

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PRODUCTS OF: **ELASTIC STOP NUT CORPORATION OF AMERICA**

Move over, Brothers...

Make room for the newest member of the world's biggest brush family!

THERE'S been a new addition to the world's most famous family of power brushes. It's called the Situft and it's the most amazing little brush you ever saw.

It's built on an entirely new principle of wire suspension and it can do jobs no other brush (in some cases, no other tool!) could ever do before. Its cost is almost unbelievably low—only 17¢ per brush—yet it has saved thousands of dollars in production costs, *cleaning, deburring, and surface finishing internal, hard-to-get-at places.*

It's a worthy addition to Osborn's line of Master Wheels, Monitors, Disc Section Centers, etc.—brushes which have won the plaudits of the industrial world.

A complete tool crib containing one each of 12 sizes (¼" to 1¼") and 2 holders costs only $2.85. Kits and open stock (3 dozen to a box) available from your Osborn distributor.

Osborn Brushes

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

THE OSBORN MANUFACTURING COMPANY
5401 Hamilton Avenue *Cleveland, Ohio*

It isn't the sock

What cuts short the potentially-long life of wood in certain locations, as, for example, in the decks of gondola railroad cars? Is it the mechanical wear-and-tear from the banging and bumping of heavy loads, or is it really the quiet, almost invisible borings of the wood-destroying fungi called mycelium?

For years, many people thought it was the mechanical wear, and that there was no saving, therefore, in giving wood pressure treatments with creosote to protect it from decay and insect attack.

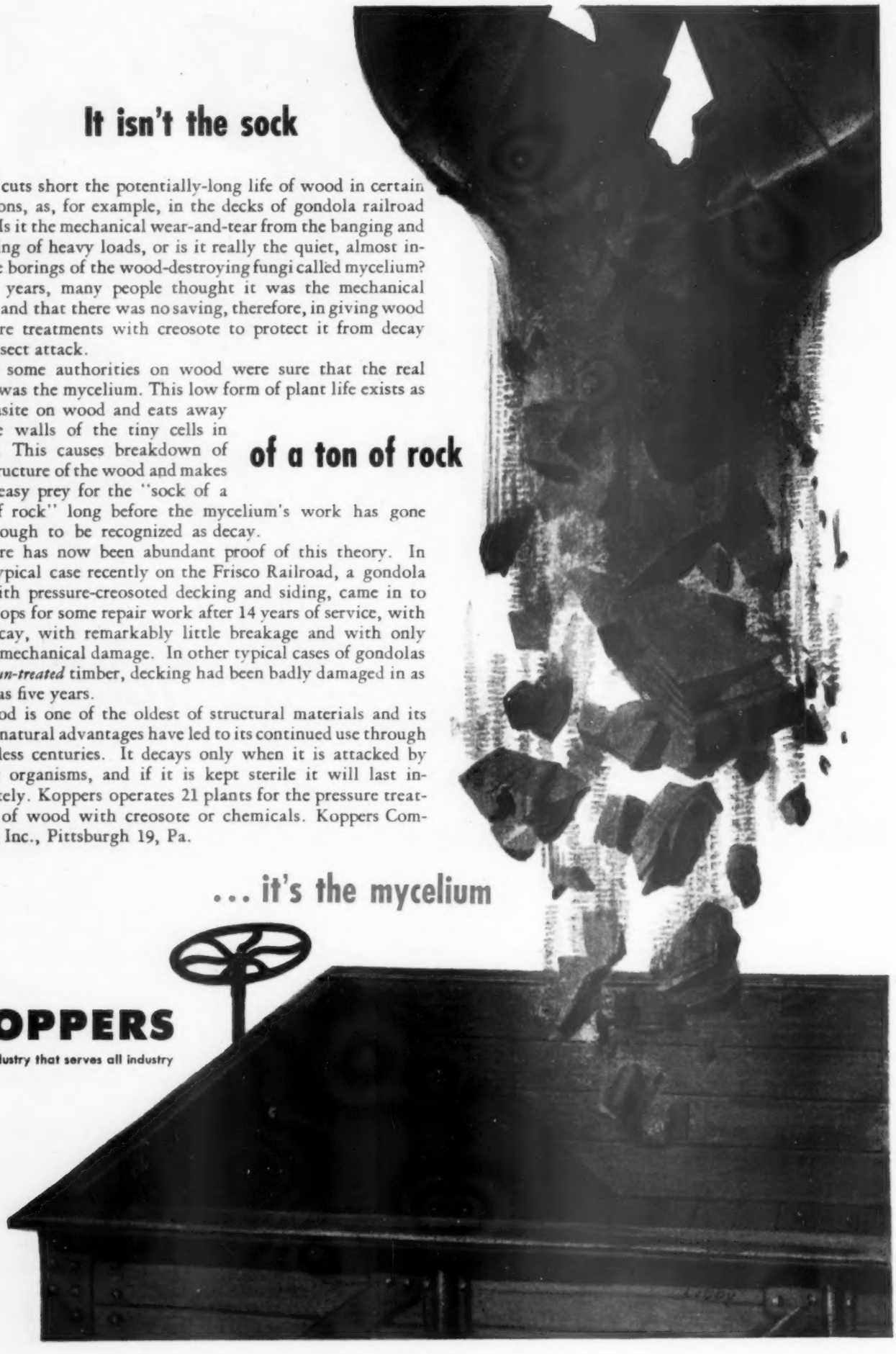
But some authorities on wood were sure that the real cause was the mycelium. This low form of plant life exists as a parasite on wood and eats away at the walls of the tiny cells in wood. This causes breakdown of the structure of the wood and makes it an easy prey for the "sock of a ton of rock" long before the mycelium's work has gone far enough to be recognized as decay.

of a ton of rock

There has now been abundant proof of this theory. In one typical case recently on the Frisco Railroad, a gondola car with pressure-creosoted decking and siding, came in to the shops for some repair work after 14 years of service, with no decay, with remarkably little breakage and with only small mechanical damage. In other typical cases of gondolas with *un-treated* timber, decking had been badly damaged in as little as five years.

Wood is one of the oldest of structural materials and its many natural advantages have led to its continued use through countless centuries. It decays only when it is attacked by living organisms, and if it is kept sterile it will last indefinitely. Koppers operates 21 plants for the pressure treatment of wood with creosote or chemicals. Koppers Company, Inc., Pittsburgh 19, Pa.

... it's the mycelium



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You can ship your products safely—without physical damage or loss from rust, mildew, dirt, dust, or fungus growths in the hermetically sealed Jaltainer. They will be protected in storage too, where the specially "necked" bottom of the Jaltainer makes for easy stacking. Your products will arrive in factory-fresh condition when shipped in Jaltainer. Write today for information.

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A SUBSIDIARY OF JONES & LAUGHLIN STEEL CORPORATION

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J&L STEEL

"Know-How" Information

USE COUPON BELOW — FOR YOUR PLANT

☐ **1. RUBBER SUSPENSION SPRINGS** — Comprehensive discussion and technical description of Torsilastic rubber springs for vehicular, as well as general industrial application, are included in B. F. Goodrich Co. illustrated 16-page booklet, "Suspend It On Rubber." Development of rubber suspension is outlined. Technical details, with accompanying graphs and charts, are in "layman's language." Check No. 1 for your copy.

☐ **2. PORCELAIN PLUNGERS** — Six-page illustrated data bulletin, No. 57-2, describes Kosmos Porcelain plungers which manufacturer states can be used on almost any hydraulic pump up to 2000 psi. Construction details, specifications, types of service and purchasing information are given. Aldrich Pump Co.

☐ **3. BELLOWS-DIFFERENTIAL Flow Meter** —Bulletin F1603, describing in detail a bellows type differential flow meter which requires no mercury, is offered by the Bristol Co. Cross section drawing illustrates method used to transmit bellows motion to pen arm. Ranges available both as recorders and controllers are listed.

☐ **4. REBUILDING MACHINE TOOLS** — Special service rebuilding, motorizing and modernizing worn-out machine tools is outlined in Botwinik Bros. of Mass., Inc., booklet, which describes plant facilities of this mechanical Mayo Clinic. Listing of "for sale" machines is also included.

☐ **5. HARD SURFACING** — Technical bulletin covering hard surfacing and the use of Hardex electrodes in building up surfaces for resistance to shock and abrasion is offered by Metal & Thermit Corp. Bulletin contains helpful information on temperature and cooling rates, selection of rods and recommended techniques.

☐ **6. LOCOMOTIVE CRANES** — Catalog No. 77 issued by Orton Crane & Shovel Co. describes their standard and broad gauge diesel and gasoline locomotive cranes. Construction and engineering details are illustrated, explained.

☐ **7. BELT CONVEYOR FURNACES** — Oil and gas fired and electrically heated belt conveyor furnaces for annealing, bright annealing, brazing and sintering, preheating, etc., are illustrated and described in W. S. Rockwell Co. folder No. 421. Advantages claimed are uniform heating and cooling at controlled speed, increased production, uniform results.

☐ **8. WASHING BOTTLES, CONTAINERS**— Folder No. A-300 giving detailed information on Phosflake, a washing compound for machine washing of bottles and other containers, is offered by Columbia Chemical Div. of Pittsburgh Plate Glass Co. Solution temperatures and strength and other pertinent data are included.

☐ **9. BATTERY RECHARGER** — Illustrated bulletin No. 205 describing motor-generator multiple circuit battery chargers for motorized hand-lift trucks is offered by Electric Products Co. Standard charger is claimed to fully recharge 6-cell lead batteries "on the spot" in 8-9 hours, Edison batteries in 7 hours. Charger is fully automatic.

☐ **10. EYE PROTECTION** — Amcoweld safety lenses for specti-goggles, goggles, helmets and handshields are described in new catalog section AWP-21 issued by Eastern Equipment Co., Inc. Varied types of welders' lenses and safety lenses for chipping and grinding operations are illustrated.

☐ **11. "SELECTRODE CHART"** — A 10½" x 17" guide to help electrode users select the correct electrodes for specific jobs is offered by Hollup Corp., Division of National Cylinder Gas Co. Six chart sheets included list applications, currents, positions, physical characteristics, etc., and electrodes recommended for mild steel, low alloy steel, stainless steel, non-ferrous and cast iron steel, surfacing steel and gas welding rod electrodes.

☐ **12. CABLE HANDLING**—"Roll-A-Reel," a portable roller-fitted (ball bearing) steel stand claimed to provide a safe, efficient and quick method for handling heavy reels of cable, is detailed in folder, "The New Way," issued by Westinghouse Electric Supply Co. Roll-A-Reel comes in 2 sizes—for single reels up to 28" wide or 2,000 lbs., and for two 24" wide reels or one 48" wide reel.

☐ **13. RESISTORS**—Bulletin 126 issued by Ohmite Mfg. Co. gives electrical, mechanical and dimensional data on new line of Riteohm ½ watt and 1 watt non-inductive, pie-wound + or —1% precision resistors. Mountings and terminals, stock units, etc., are shown.

☐ **14. WRAPPING MACHINES** — Adjustable machines designed to meet various modern packaging requirements for old or new products, as well as staples such as fruits, candies, gum, tobacco, vegetables, textiles, etc., are described in Package Machinery Co.'s new bulletin.

☐ **15. CIRCUIT BREAKERS** — New 20-page bulletin B-3687 describing AB "De-ion" circuit breakers for railroad passenger cars is offered by Westinghouse Electric Corp. Besides petinent data on breakers, booklet suggests arrangements for protection of a-c and d-c circuits and explains principles of thermal, magnetic and thermal magnetic trip-release actions.

☐ **16. POWER TRACK DRILL**—Lightweight power track drill to provide faster, easier drilling of bolt holes in any weight "T" rails is featured in Buda Co.'s bulletin #1233. It drills 1⅛" hole in 90# rail in 30 seconds, is easily carried by two men. Manual drill for drilling "T" rails, girder rails or "I" beams is also described.

☐ **17. IGNITION SYSTEM** — "Uni-Power" is tile of booklet describing a new unified ignition system for aircraft, automotive,

(*Continued on page* 12)

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FOUR PAGES OF "KNOW HOW" 10-12-14-16

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The distributor of industrial tools and supplies performs a very necessary function in the commercial economy of a nation whose industries are huge, varied and located over a vast area.

He is both a *gatherer* and a *distributor*.

He scours the earth for the things you need. He examines and studies them; weighs their merit and value; helps determine which brands will serve you best. Thus he becomes expert on selection, application and proper use. He stocks or warehouses countless items—and patiently awaits your pleasure as to *when* you may want *how much* of *what*.

He takes over sales, credit, delivery and other services which, if handled by the manufacturer himself, would increase the latter's supplying costs—and consequently your purchasing costs.

Yes, your industrial distributor does these and many more things in both your and the manufacturer's behalf which it would be uneconomical for either to do independently.

The more support he gets—from both manufacturer and user—the more useful he becomes to all concerned. Nicholson believes firmly in this policy.

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"Know-How" Information, Continued

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marine and industrial engines, in which coil, condenser and distributor are combined in a single unit which weighs about 2½ lbs. LaPointe-Plascomold Corp.

☐ **18. FLEXIBLE ADHESIVES** — "Flexible Adhesives for Bonding and Coating" is title of bulletin issued by U. S. Rubber Co., Mechanical Goods Div., which gives data on uses, characteristics, application, bonding and physical properties of its general purpose bonding cements, synthetic rubber splicing cement, heat resistant putty, sealing putty, flexible rubber coatings, protective synthetic coating, artists' cement, etc.

☐ **19. LADLE LINING** — An outline of practice followed in lining lip pouring ladles of 300 lb. capacity or over is given in Ironton Fire Brick Co.'s "Information Circular #21—Lining Ladles with 'Ironton Nojoint'." Helpful tips on using Ironton Nojoint are included.

☐ **20. CRUSHERS** — Bulletin 7B-6369 describes Allis-Chalmers new "A-1" jaw crusher which is recommended for tough, abrasive, high compressive strength materials. High capacity, continuous smooth service and reduced maintenance are features.

☐ **21. PORTABLE CONVEYOR** — "Power-Helper," Metzgar Co.'s new compact, maneuverable belt conveyor, is introduced in 4-page illustrated folder. Machine is adjustable from horizontal to 45° angle, has spring suspension, and can be coupled with Metzgar gravity roller or wheel conveyor for long runs or from floor to floor.

☐ **22. ALUMINUM COATED Steel**—"Armco Aluminized Steel" is title of 24-page booklet that describes new special-purpose sheet steels for resistance to heat and corrosion. Aluminum coated on both sides, sheets have strength of steel at moderately elevated temperatures and lower coefficient of expansion than some of the widely used non-ferrous metals. Booklet contains data on heat reflectivity, mechanical properties, forming properties, painting and finishings, electrical conductivity, welding, brazing and soldering. American Rolling Mill Co.

☐ **23. RUST PREVENTIVES** — Catalog detailing Nox-Rust Chemical Corp.'s line of solvent, oil, grease and permanent type rust preventives, aluminum and plastic strip coating and rust remover will interest P.A.'s looking for metal protectives. Details including application and coverage of compounds are included.

☐ **24. FEED WATER HEATERS**—Illustrated bulletin describing feed water heaters, deaerating and standard open types, is offered by Swartwout Co. Construction and operation details clearly explained.

☐ **25. PRECISION PRODUCTION** — New gage block utility set that enables mechanic to transfer gage block accuracy direct to work are featured in George Scherr Co.'s bulletin, "Precise Production." Dial test indicator, Vernier caliper, Swiss type hand tachometer, etc., are also illustrated and described.

☐ **26. FLUORESCENT LIGHTING** — Complete line of commercial fluorescent luminaries for offices, public buildings, stores, etc., made by Mitchell Mfg. Co., is covered in catalog 285. Detailed description, photo and light calculation table are given for each model.

☐ **27. GAS S.O.S. SYSTEM** — Technical 8-page illustrated bulletin describes Davis combustible gas alarm system, which detects and warns of hazardous gas or vapor conditions. Operation principle is explained. Davis Emergency Equipment Co., Inc.

☐ **28. INSULATION**—"Careycel, Improved Heat Insulation," is title of booklet on an asbestos heat insulator that is recommended for hot surfaces to about 300°F or steam pressure of 100 lbs. Booklet was developed to facilitate specification of lightweight heat insulation for commercial and industrial use. Careycel is produced in 3-foot split cylindrical sections, sheets and blocks. Philip Carey Mfg. Co.

☐ **29. OXYGEN MASK**—Bulletin announcing new Demand-type oxygen mask for respiratory protection in unbreathable atmospheres has been issued by Mine Safety Appliances Co. Mask is always ready for use, requires no practice or training. Two types, one with cylinder on wearer's back with 1 hour's supply of oxygen, and front sling model with smaller cylinder for shorter periods, are available.

☐ **30. DECORATED, PERFORATED Metal**—Line of Lacecame decorative perforated metal for maximum free air space, concealment, rigidity, is detailed in Wickwire Spencer Steel folder. Line is said to harmonize with practically all modern architectural motifs and is supplied in cold rolled steel, 22, 24 and 26 USS ga., in bronze, brass and aluminum.

☐ **31. REGULATOR** — Type 2-SO regulator, to regulate ratio of pressures or differential pressures, is covered in bulletin 1245 issued by Hagen Corp. Features include operating range from 0.10" water col. to 5 p.s.i. It is used for control of suction, pressure or flow ratio in any gas or air flow system.

☐ **32. SANDING OPERATIONS** — "How to Speed Up Sanding Operations" is title of new illustrated folder detailing features and operation of Sundstrand pneumatic sander and deburrer. Sundstrand Machine Tool Co.

☐ **33. LIFT TRUCKS** — Catalog section describes Model G Red Giant hand lift truck made by Revolator Co. It permits raising load with handle turned to either side. Red Giant is made in two widths, all standard sizes, and capacities up to 3500 lbs.

☐ **34. PORTABLE ELEVATING Unit** — Catalog section describes all electric Revolator Co.'s portable elevator, or self-contained hoist units. Standard capacities range from 500 to 5000 lbs. It has push button control. It may be arranged for operating on any commercial circuit.

☐ **35. AUTOMATIC CLUTCHES**—Salsbury automatic clutches, featuring automatic centrifugal action, are covered in illustrated bulletin issued by Salsbury Motors, Inc. Among features are positive action, elimination of starting stresses, 100% automatic clutching, 100% automatic disengagement and smooth, cushion power flow.

☐ **36. ALUMINUM BRONZES** — Bulletin 72 highlight's Ampco's line of alloys, specialties and services, including fabricated assemblies, continuous cast bearing bronzes, arc welding electrodes, precision machining etc. Listing of physical properties of Ampco metal is given. Ampco Metal, Inc.

☐ **37. STEAM CLEANING**—Multiple duty, Oakite-Vapor cleaning unit, engineered for faster, low cost, better cleaning, is described in bulletin issued by Oakite Products, Inc. Features include portability, large capacity tank and delivery, and rapid steam generation. Shop wheels and

(*Continued on page* **14**)

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FOUR PAGES OF "KNOW HOW" 10-12-14-16

FOR BETTER–FASTER–MORE ECONOMICAL THREADING

Sign on the DOTTED *Line*

Threadwell COLD-TEMPER Taps are identified

- by the *color* dot on the shank (*red* dot for high speed cut thread, *white* for commercial ground, *blue* for precision ground)
- by the *"tap-capsule"*—each ground thread tap in its individual transparent plastic tube
- by their *greaseless rust-proofing*— never messy or sticky to handle
- by their *suporior performance*—cold-tempering at 120° below zero makes them stronger yet less brittle, assures better threads and more of them per tap, on plastics and abrasive materials as well as on steels, cast iron and alloys.

There is a *Threadwell* distributor near your plant—geared to give your tap requirements intelligent *personal attention.* May we put you in touch with him?

DISTRIBUTORS IN LEADING INDUSTRIAL CENTERS THROUGHOUT THE UNITED STATES AND THE WORLD

THREADWELL KEYWAY CUTTERS

provide the fastest, simplest method of cutting keyways to standard width and any desired depth in gears, cutters, pulley hubs, couplings, etc. May be used in any press.

Threadwell offers an ideal Arbor Press for the purpose that is light, strong and inexpensive. Write for descriptive Bulletin.

Threadwell and Tools SINCE 1902
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THREADWELL TAP AND DIE COMPANY · GREENFIELD, MASSACHUSETTS, U. S. A.

CALIFORNIA OFFICE, THREADWELL TAP & DIE CO. OF CALIF., 1322 SANTA FE AVE., LOS ANGELES 21

"Know-How" Information, Continued

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chassis available for maneuverability. Industrial uses listed.

☐ **38. MATERIALS HANDLING** — Action photos and diagrams illustrate variety of materials handling equipment in which cone-drive gearing is used in 8-page booklet, "Cone-Drive Gearing At Work In Materials Handling," issued by Michigan Tool Co. Design and application principles are explained and illustrated.

☐ **39. "FROZEN" SALT Defroster**—Characteristics of a new electric salt bath furnace coil to "unfreeze". Upton salt baths are given in Upton Electric Furnace Div. Bulletin U-212. New starting coil is said to permit rapid starting or speedy thawing of salt which has chilled and solidified in furnace.

☐ **40. ASSEMBLY PRESSES** — Standard line of Model PA hydraulic "assembly" presses for a wide range of assembly operations is described in Colonial Broach Co. bulletin PA-45. Presses are available in 15, 20, 35 and 50-ton capacities.

☐ **41. COOLERS, CONDENSERS** — Fin-Fan air-cooled heat exchanger, described in Griscom-Russell Co. bulletin, is a package unit for condensing and cooling fluids without use of water. Unit utilizes air as cooling medium and on installation requires only power for operation. Fan drive may be electric motor, steam turbine or gas or oil engine.

☐ **42. "HANDY" TRUCK**—An all-purpose, single-handled hand truck for moving boxes, bags, barrels and other heavy or bulky loads is described in bulletin issued by Schmidgall Mfg. Co. Steel carrying platform measures 12" x 9".

☐ **43. SAMPLE RING BINDER Sheet**—Free sample of ring binder sheet with reinforced hinge is available from Wilson Jones Co. Cloth strip reinforcement, staggered in 3 widths to avoid bulk, prevents tearing of sheets at punchings.

☐ **44. TAPES & SPLICING** — New catalog section on its lines of rubber tapes and splicing compounds has been issued by B. F. Goodrich Co. Featured is Two-In-One tape which is claimed to weatherseal wire or cable splices in one operation in less than half the time needed for combined use of friction tape and splicing compound. A single layer of this type is said to provide adequate insulation for lines carrying up to 220 volts.

☐ **45. STEEL CORROSION Guide**—"Corrosion of Steel" is title of revised U. S. Steel booklet which is intended as a general guide to evaluate how various commercial steels may reasonably be expected to resist attack of some common environments. It includes information and comparisons of the corrosion-resisting properties of steels, as well as a section on preservatives.

☐ **46. BUSHINGS** — Ampco's new line of aluminum bronze bushings to keep blanking, forming and other die sets in alignment is covered in bulletin 80. Bulletin lists available standard sizes of this line of finish machined bushings. Ampco Metal, Inc.

☐ **47. MEASURING VISCOSITY** — Continuous Viscosimeter, representing radical departure from ordinary methods of viscosity measurement, is described in Fischer & Porter Co. technical bulletin. It is constructed to permit instantaneous observation of viscosity values in moving fluid. Instrument is said to be valuable for continuously blending lube oils, indicating end points in various plastic processes, and in maintenance of constant fuel oil viscosity for oil burner operation.

☐ **48. ALUMINUM—ALUMINUM Alloys** — Facts, photos and figures on aluminum and aluminum alloys and their role in tomorrow's products are contained in new 16-page catalog 100A issued by the Aluminum Div. of Reynolds Metals Co. Special sections are devoted to: alloys and their general properties; sheet, plate, wire, rod, bar, tubing and pipe forms; special forms, both cast and forged; fabrication and finishing; and the Reynolds method for fabricating parts.

☐ **49. CO_2 INDICATOR**—Circular on Stack-O-Meter, a small portable instrument to indicate CO_2 stack temperature and draft readings, is available from Davis Emergency Equipment Co., Inc.

☐ **50. ARC WELDING Electrodes**—Pocket-size folder DM-710, listing Hobart Bros. Co. complete line of post-war arc welding electrodes, furnishes descriptions, application, procedure, physical properties of deposited metal, and sizes.

☐ **51. NEW STAINLESS STEEL** — U. S. S. Stainless W is a stainless steel which can be furnished in a relatively soft state for machining or forming, and then converted into a high strength condition without danger of cracking or distortion by a simple short-time, low-temperature heat treatment. Corrosion resistance is of the 18-8 type. Booklet tells about this new stainless steel, which is of the chromium-nickel type. Carnegie-Illinois Steel Corp.

☐ **52. OPENSIDE PLANER** — Full story of the Rockford Hy-Draulic Openside Planer is presented in a new bulletin issued by Rockford Machine Tool Co. Matter presented enables reader to make sound preliminary analysis of the advantages offered by the machine. Detailed specifications are given for the four rates sizes each available with a choice of 5 stroke lengths from 10 to 20 ft.

☐ **53. CLEANING — DRAWING COMPOUNDS** — Catalog covers 39 different cleaning and drawing compounds marketed by Northwest Chemical Co. Five classifications of cleaners are covered, namely, electrolytic, immersion, solvent, spray, and water wash compound for spray booths. Compounds are particularly designed for brass and alloys, cold rolled steel, enameling iron, stainless steel and aluminum, steel alloys and stainless steels, aluminum and brass, and heavy draws.

☐ **54. ELECTRIC UNITS**—SOLAR fluorescent lamps, starters, insecto lamps, plug fuses, cartridge fuses, dry batteries and germicidal lamps, infra-red lamps, etc., are covered in new catalog. Solar Electric Corp.

☐ **55. CLAMSHELL BUCKETS** — Four-rope clamshell buckets are the subject of new booklet 2059, issued by the Blaw-Knox Co. Buckets are designed for handling coal, ore, open hearth slag, lake boat cargoes of many kinds, and most granular free flowing materials. Examples of performances are given.

☐ **56. PAPERLINED TEXTILE Bags**—"Seven Facts About Low-Cost Protective Packaging" is title of booklet just released by Bemis Bro. Bag Co. It features waterproof paperlined textile bags which are used extensively as containers for many "hard to pack" products. They give protection against moisture, contamination, sifting, odors, insects and loss of aroma; plus savings in operating costs.

☐ **57. ACCURATE WEIGHING** — Circular describes scale attachment that is said to give small scale accuracy to platform scale. It magnifies beam movement 9½ times. Indicator swing is held to minumum by special air dash pot. Maker says it makes for precision accuracy, greater speed,

(*Continued on page* 16)

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clearer visibility, and saves time and money. Detecto Scales, Inc.

☐ **58. GRINDING—LAPPING** — Catalog 1843-5 presents in brief form the various types and purposes of Norton machines for grinding and lapping. Cylindrical, crankshaft, roll, camshaft, multipurpose and autopart, tool and cutter grinders, surface grinders and others are illustrated and described. Norton Co.

☐ **59. NICKEL ALLOY Parts Buying Guide** —Designed as a permanent buying guide, booklet "How to Find Long Life" available from International Nickel Co. is 44-page listing of the suppliers of Inco Nickel Alloy parts and accessory equipment. Illustrations show equipment on the job in chemical, power and process industries. The International Nickel Co.

☐ **60. TANTUNG Metal** — "TanTung The Miracle Metal" is title of bulletin issued by Fansteel Metallurgical Corp. TanTung is resistant to heat, wear and corrosion. Tantung castings ready for use except for grinding are available for cutting tools and for heat, wear and corrosion resistant applications. Tantung is also available as facing metal.

☐ **61. DIAMOND GRIP COLLETS** — New catalog describes Sutton Diamond grip collets and feed fingers. Collets give the advantages of diamond serrations, which are said to reduce slippage and spoilage practically to zero, and clear themselves of dirt, scale and chips. The "Super Feeder" will accommodate round, square or hexagonal stock to machine capacity. Catalog contains detailed specifications and list prices. Sutton Tool Co.

☐ **62. GAGE BLOCKS** — Johansson gage blocks and accessories are detailed in catalog No. 17 issued by Ford Motor Co., Johansson Div. There are 3 grades or standards, "B", "A", and "AA" having reference to guaranteed limits of accuracy, namely, plus or minus .000008 in., 000004 in. and 000002 in. respectively.

☐ **63. POWER SCREWDRIVER**—Magazine Feed Power Screwdrivers, Motorized Hopper Units, are described in new catalog of Detroit Power Screwdriver Co. Machines will drive standard machine screws, wood screws, sheet metal screws, self-tapping screws with standard round, flat, binder, fillister or hext heads and special heads. Various models are illustrated and described.

☐ **64. EXPANSION BORING TOOLS** — Bulletin describes the Davis Expanding block type boring tool equipment, expansion "L" type tools for rigid boring, fly cutter tools, micrometer adjustable block line boring tools, and car wheel boring tools, engineering data and order information. Davis Boring Tool Divn. of Giddings & Lewis Machine Tool Co.

☐ **65. JOB ANALYSIS (clerical)**—Complete working manual on the Technique of Job Analysis and Evaluation in the clerical, technical and administrative fields is available from the Weatherhead Company. It consists of 135 pages and is styled a "complete, practical working manual of salary job evaluation." It is being made available to management officals in the interests of better management.

☐ **66. OVERHEAD CONVEYORS**—Bulletin "Utilize the Air Rights of Your Ceilings" explains the advantages of Lamson overhead chain conveyors to increase the capacity and efficency of floor space and to lower costs in plants, stock rooms and shipping departments. Lamson Corporation.

☐ **67. STAINLESS STEEL TRADENAMES**—Booklet listing both former and present trade-names of stainless steels of all leading producers, has been issued by Rustless Iron & Steel Divn., American Rolling Mill Co. It is especially helpful to Purchasing Agents. The steels are broken down into straight chromium grades and chromium-nickel grades, and listed according to hardenability, austenitic and martensitic qualities, and machinability. Chart shows AI& SI types and analyses, by AMS and ASTM materials designations and by government specifications.

☐ **68. JACK CATALOG** — Hundreds of jacks of conventional and special types in sizes from 3 to 100 ton capacity are pictured and described in pocket-size book No. 45 which gives dimensions, capacities, weights, etc., issued by Templeton, Kenly & Co. Two indices show jacks by types and numbers respectively.

☐ **69. DESK TRAY** — Two-Tray desk unit known as Rotarian letter tray is described in bulletin issued by Art Steel Sales Corp. Upper tray is supported by bracket with rotary swivel action.

☐ **70. INDUSTRIAL CONTROLS** — Visible filing equipment, metal planning boards, visible index board, gravity cabinets and slipholders are described in catalog issued by McCaskey Industrial Register Co. Controls include production, inventory, maintenance, tools, costs, payroll, etc.

☐ **71. ELECTRONICS GUIDE**—"The Business Man's Guide to Electronics" is title of 28-page illustrated booklet A-4726 issued by Westinghouse Electric Corp. It explains the six fundamental functions of electronic tubes, rectifying, amplifying, generating, controlling, counting and sorting, and inspecting and the tubes required for each function. Induction and dielectric heating are described, as are welding control and regulators for mixing and packaging.

☐ **72. SHAPERS** — Eight-inch stroke, hy-duty, Shape-Rite shapers for precision work are described in bulletin issued by Sales Service Machine Tool Co. They are furnished with plain or swivel tables. Motor is mounted on hinged bracket to maintain tight belt.

☐ **73. POWER HACK SAW** — Bulletin describes No. 3 Hy-Duty Keller Power hack saw. It has cabinet base with coolant tank built in base with sediment compartment for chips; and variable feed pressure control to blade, which varies pressure to give proper cutting feed. Sales Service Machine Tool Co.

☐ **74. SUMP TANK CLEANER** — General Catalog 45 describes Carnes oil and chip handling equipment. Sump tank "D" is complete portable machine made in two sizes, 100 and 150 gallon tank capacity. Sludge or coolant is drawn from sumps at rate of 40 gallons per minute by high vacuum—only air passes through pump. Unit is said to do cleaning jobs in 1/6 usual time. Filter bags can be reused. Other types are illustrated and described. W. R. Carnes Co.

☐ **75. RUBBER CUSHIONED ABRASIVES** —Catalog No. 57 demonstrates by text and actual use illustrations a wide variety of industrial applications of Brightboy rubber cushioned abrasives for finishing metals, plastics, wood and other materials. Brightboy Industrial Division, Weldon Roberts Rubber Co.

☐ **76. POT & HEAT-TREATING Furnaces**—Broadside describes Johnson pot-hardening furnaces which are featured by lid lifting mechanism, 8" hammered plastic insulation, and automatic lighting device. Other types and various Heat-Treating Furnaces are also illustrated and described. Johnson Gas Appliance Co.

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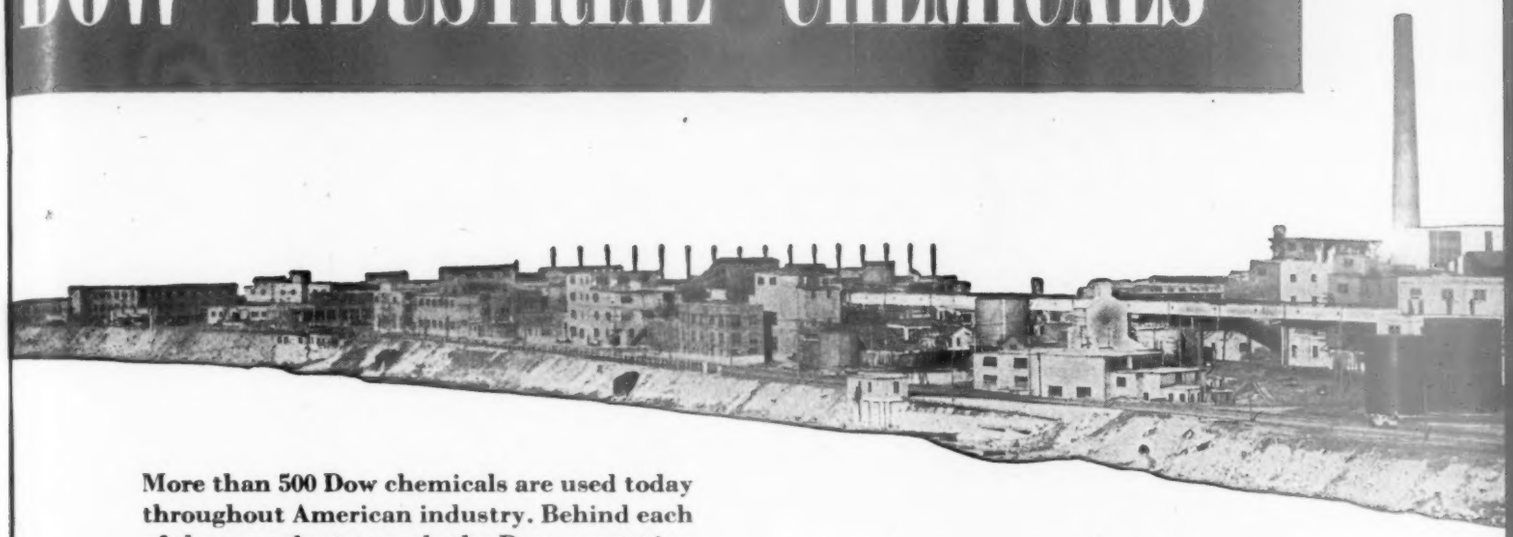
DOW INDUSTRIAL CHEMICALS



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Bromacetic Acid
Bromine, Purified
Bromoform, Technical
4-tert-Butyl Catechol
Calcium Chloride, Anhydrous, Flake, Liquid, Powder and Solid
Carbon Bisulphide
Carbon Tetrachloride
Caustic Soda, Flake, Liquid and Solid
Chloracetyl Chloride
Dichloracetic Acid
Dichlorethyl Ether
Dichlorisopropyl Ether
Diethanolamine
Diethylaniline
Diphenyl
Diphenyl Oxide
Dowtherm A
Ethyl Benzene
Ethyl Chloride
Ethylene Chlorbromide
Ethylene Dibromide
Ethylene Dichloride
Ethylene Oxide
Ethyl Monobromacetate
Ethyl Monochloracetate
Ferric Chloride, Crystals and Solution
Ferrous Chloride, Dihydrate
Hexachlorethane
Hydrobromic Acid
Isopropyl Chloride
Isopropyl Formate
Magnesium Chloride, Anhydrous, Flake and Powder
Methocel (Dow Methyl Cellulose)
Methyl Bromide
Methyl Cyclohexane
Methyl Monobromacetate
Methyl Monochloracetate
Mining Salts
Monobrombenzene
Monochloracetic Acid
Monochlorbenzene
Monoethanolamine
Orthochlorphenol
Orthocresotinic Acid
Orthodichlorbenzene
Orthophenylphenol
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Styrene
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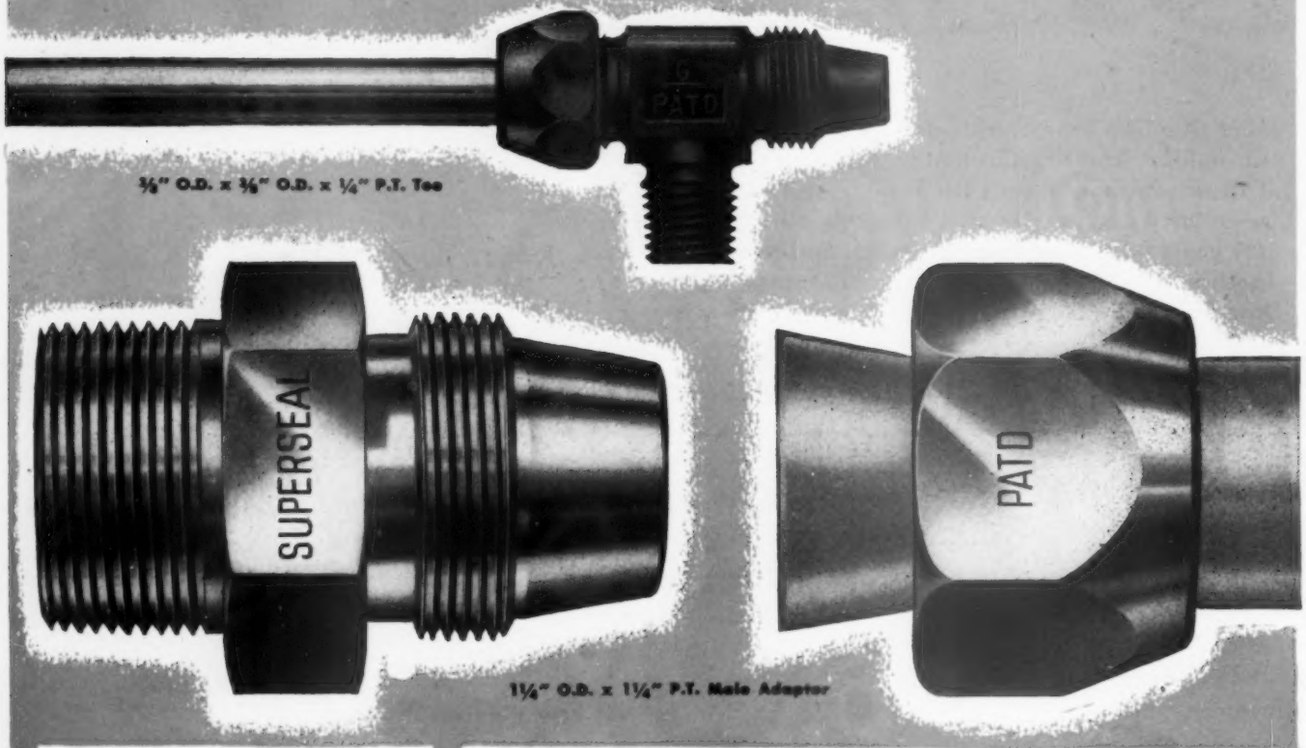
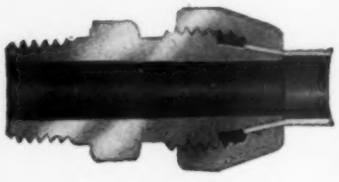


⅜" O.D. x ⅜" O.D. x ¼" P.T. Tee

1¼" O.D. x 1¼" P.T. Male Adapter



PRESSURE TEST

Underwriter's Laboratories' Report No. 42C649: " . . . When ½" steel Superseal fittings, made up with steel tubing, were subjected to pressure tests, no leakage occurred. At 8090 lbs. pressure the steel tubing split at a point away from the fittings."

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Underwriter's Laboratories' Report No. 42C649: "Superseal fittings made up with both steel and copper tubing were mounted between a rigid plate and a vibrating panel. An internal pressure of 50psi was maintained. The ½" samples were subjected to 1000 vpm with a double amplitude of ¼". After 30 hours, no leakage had occurred and there was no indication of loosening of the nuts or cracking of the tubing."

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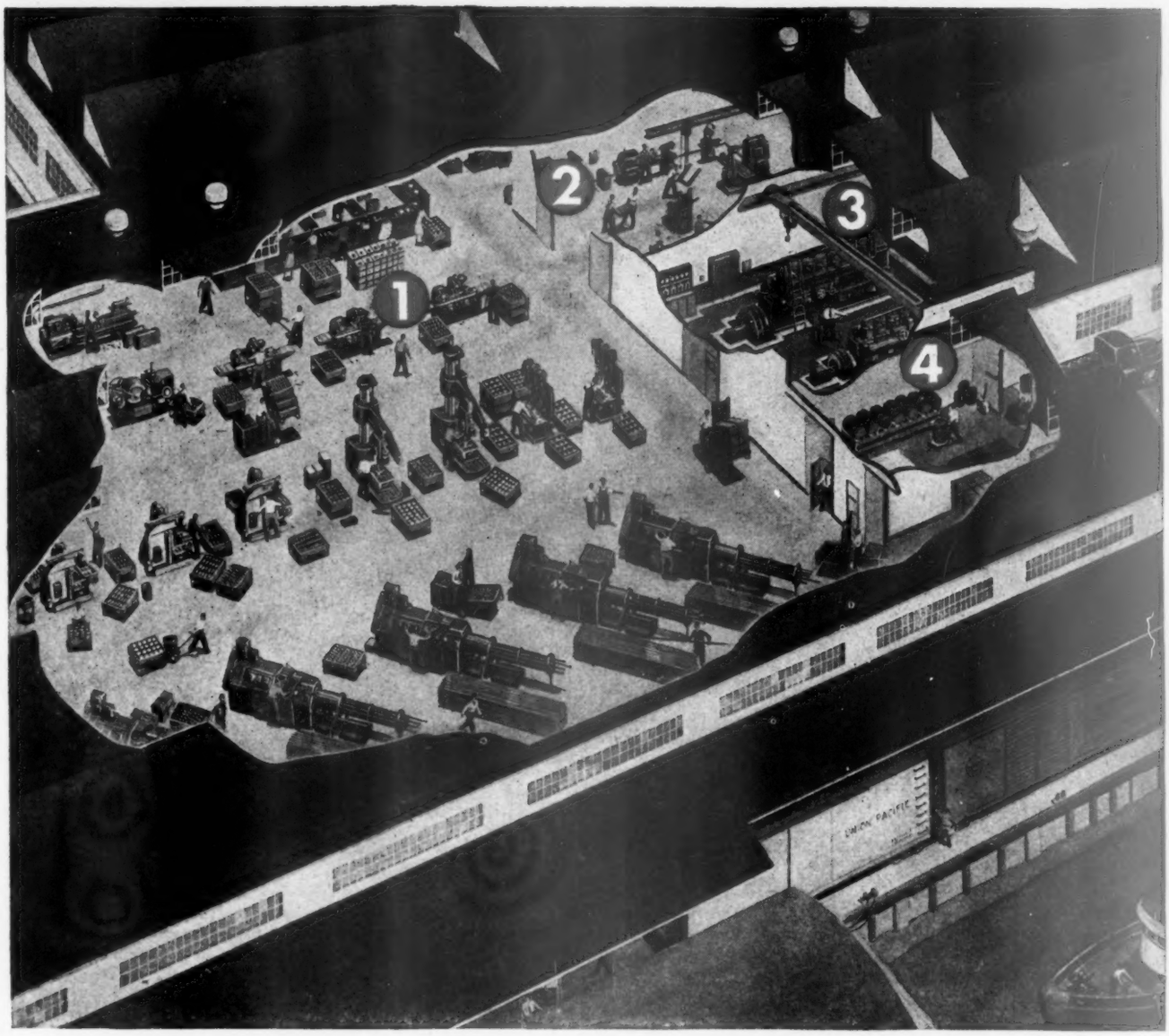

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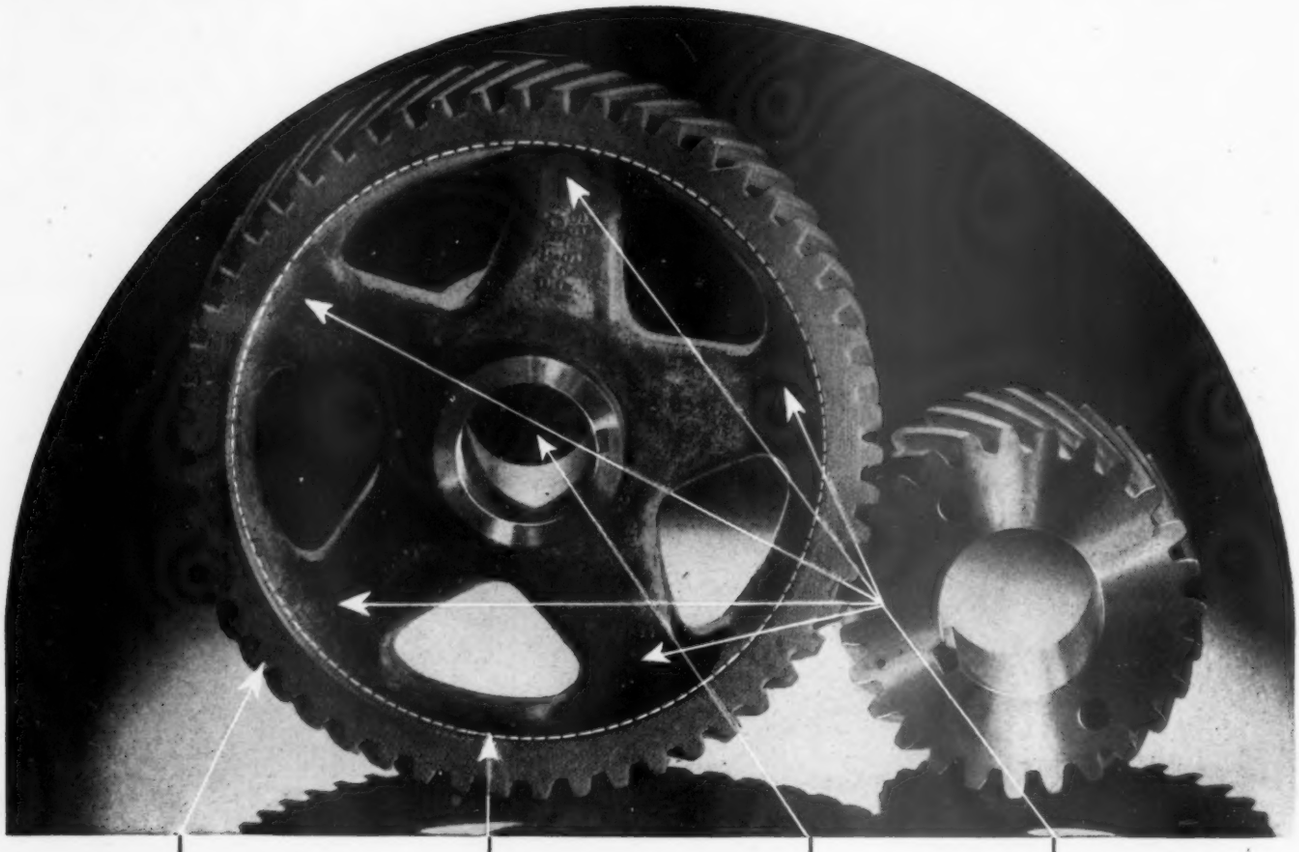

Sound vibrations originate here, in the teeth,

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Now if instead of a continuous solid center, as in conventional type NON-metallic gears, there are SPOKES, resonance is broken . . . only a fraction of the vibrations are transmitted to the hub . . . NONE are amplified.

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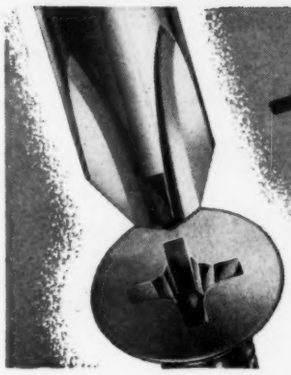

INDEPENDENT INVESTIGATOR'S STUDY SHOWS

Phillips Screws give each assembler a needed "extra hand"...end costly driver skids at SERVEL

"WE couldn't possibly use slotted screws in these door panels," the chief cabinet engineer at Servel, Inc. told the investigator. "We know, from actual tests. In many places it would be impossible to guide a slotted screw with the driver except at a snail's pace, and our driver skid damage would be terrific."

TO GET THE COMPLETE FACTS on how this leading refrigerator manufacturer enlists the many advantages of Phillips Screws, the investigator asked the same questions you would ask – learned how they make big savings day after day – the kind of savings *you* can't afford to miss with today's squeeze on profits.

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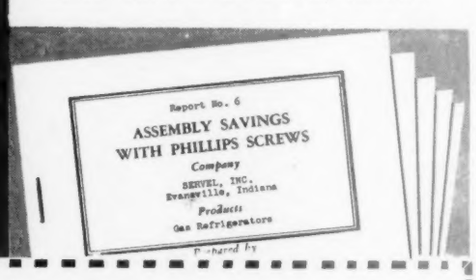

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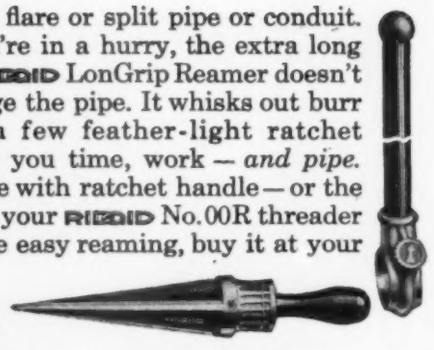
.....

With this extra-long-taper RIDGID you ream pipe more easily ..quickly.. safely...

● It won't thin, flare or split pipe or conduit. Even when you're in a hurry, the extra long taper of your RIDGID LonGrip Reamer doesn't gouge or damage the pipe. It whisks out burr cleanly with a few feather-light ratchet strokes, saving you time, work — *and pipe.* Comes complete with ratchet handle — or the reamer unit fits your RIDGID No. 00R threader handle. For safe easy reaming, buy it at your Supply House.



Reamer unit fits No. 00R ratchet threader handle.

Thread pipe faster, with less bother, with these smart, handy, little RIDGID RATCHET THREADERS Nos. 00R and 111R

Heads snap in either side... can't fall out

● With one of these efficient and tough little steel-and-malleable threaders at hand, pipe from ⅛" to 1¼" is quickly perfectly threaded. Die heads with heat-treated tool-steel chasers snap in from either side, can't fall out. No special dies are needed for close-to-wall threads. Smooth internal ratchet. No. 00R, ⅛" to 1"; No. 111R, ⅛" to 1¼." Handy, fast, durable — try one and you understand their growing popularity. Ask your Supply House.

Free handy carrier for any group of sizes.

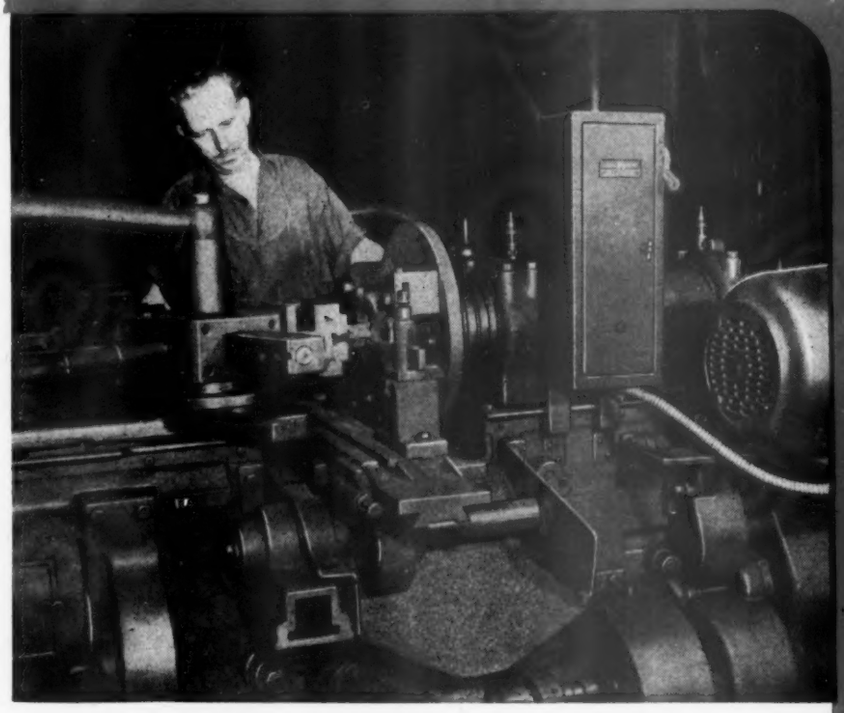
Millions of RIDGID Tools in use

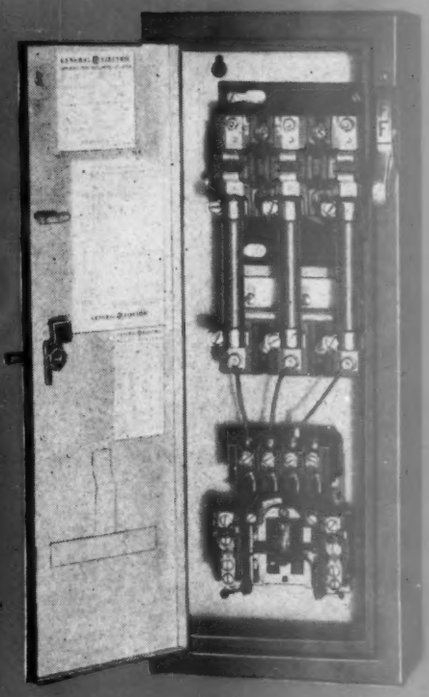
RIDGID

WORK-SAVER PIPE TOOLS

The Ridge Tool Company Elyria, Ohio, U. S. A.

300 G-E COMBINATION MOTOR STARTERS...





...give White Motor Company real protection...save time, money, too.

Magnetic starter and motor-circuit switch in *one* unit—G-E "combination" motor starters of this type give co-ordinated control to over 300 machines in the White Motor Company plant in Cleveland.

The starter shown above is installed on a lathe used in making water pumps. Others control drill presses, shapers, boring mills, grinders, and many other types of machines.

Here's Why the Combination Starter Was Chosen

- Fast-acting overload relays protect the motor controlled from overheating—and fuses protect it from damaging short circuits.
- Safety for operators is assured by interlocking doors. While the power is on, the door cannot be opened.
- Quick servicing and availability of repair parts is made possible by G.E.'s broad network of sales outlets.

Wide Field of Application

This motor company represents just one of the many different industries in which G-E combination starters are at work today. Why not give the advantages of these compact, time-saving starters to *your* plant. Our engineers will be glad to help with your application. Get in touch with our local office today. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

676-200-8910

HOW YOU SAVE...

. . . TIME. Instead of buying two devices, you order and install only one. Mounting time is cut as much as 40 per cent.

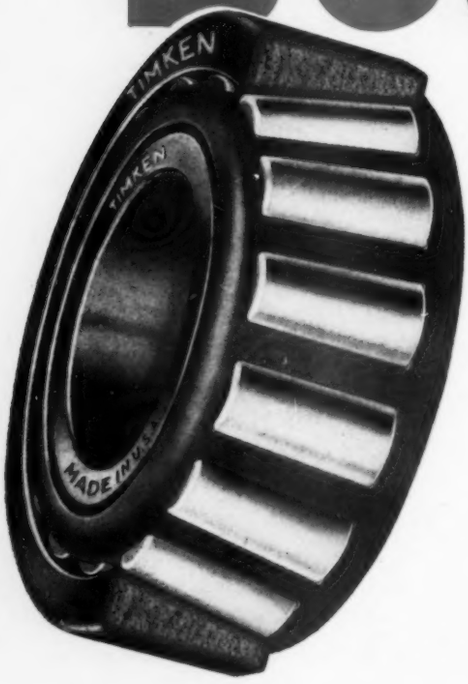
. . . SPACE. Compact combination starters can be mounted in small unused places near to or remote from the operator.

. . . MONEY. The list price is slightly more than for two separate devices, but the difference is more than made up by savings in wire, conduit, and fittings.

MORE INFORMATION about combination starters is given in our Bulletin GEA-3715A. Ask our local office for your copy.

SATISFY YOUR ENGINEERS WITH

Timken Bearings



Machine designers prefer Timken Tapered Roller Bearings for a very definite and vital reason—because they know Timken Bearings will give them the bearing performance and endurance they want and must have.

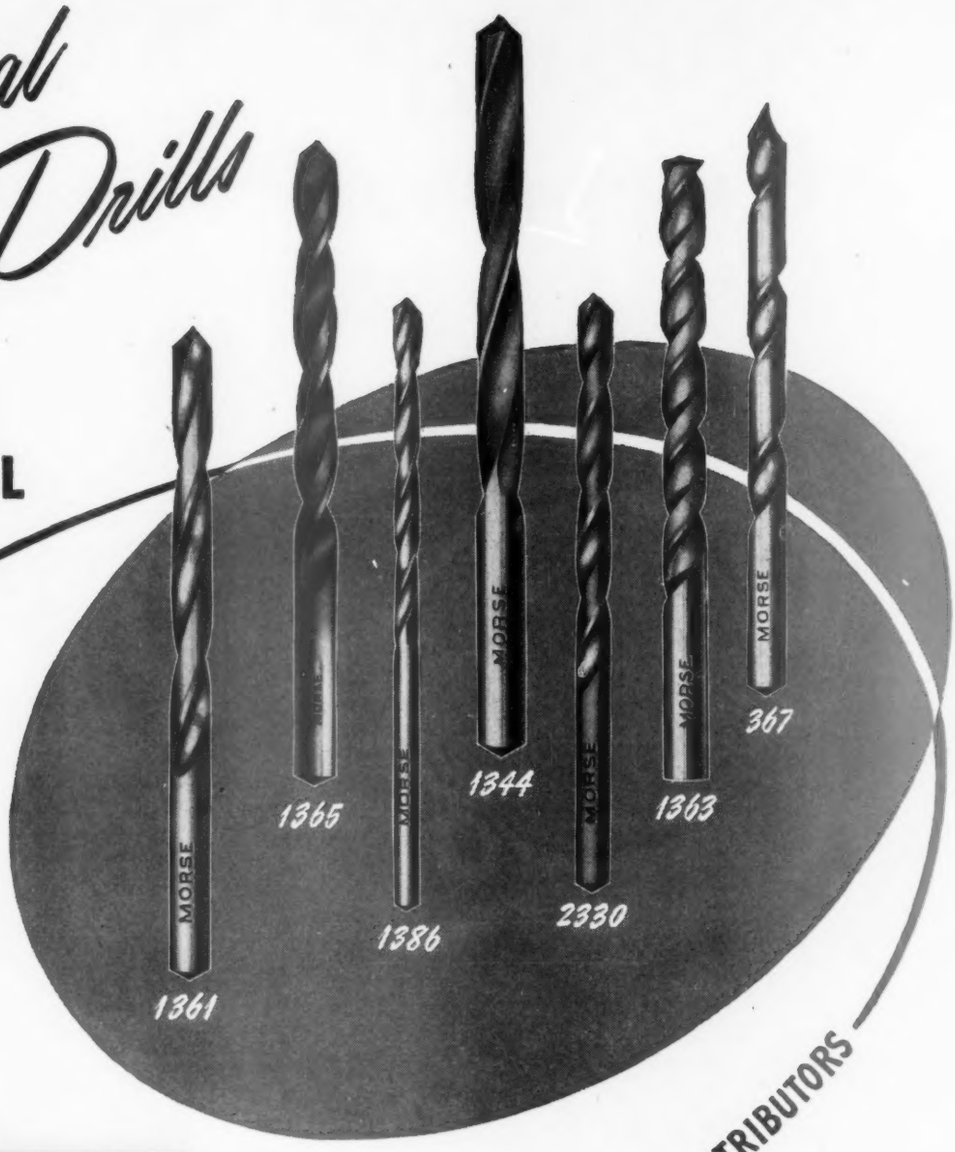
Timken Roller Bearings are old tried and trusted friends to thousands of designing engineers in many industries; they have earned this confidence through a combination of scientific design; precision manufacture; and Timken Alloy Steel, plus more than 40 years of continuous engineering development and experience.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

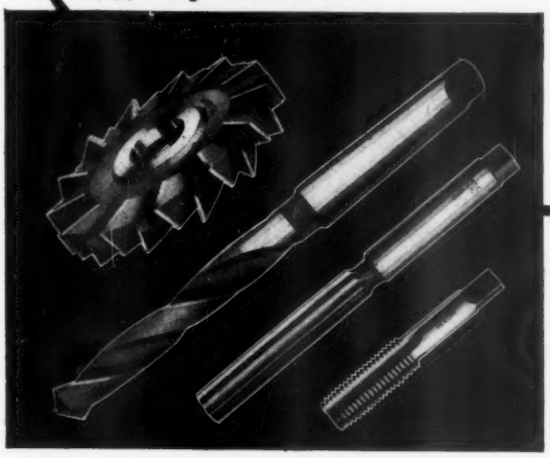
Every genuine Timken Bearing is positively identified by the trade-mark "TIMKEN" stamped on the cup and cone. Make sure it appears on every tapered roller bearing you buy. The Timken Roller Bearing Company, Canton 6, Ohio.

Special Purpose Drills

LARGE AND SMALL



1365 Heavy Duty Drills
1344 Drills For Brass
1361 "Bakelite" Drills
1386 Cotter Pin Drills
2330 Cobalt Drills
1363 "Quick Twist" Drills
367 Single Groove Drills



AS ALWAYS—THROUGH DISTRIBUTORS

To get uniform accuracy in drilling small holes or in all your drilling, tapping and reaming operations – to turn out better work *faster,* every day – always specify Morse Tools.

Styles shown above carried in stock.

MORSE

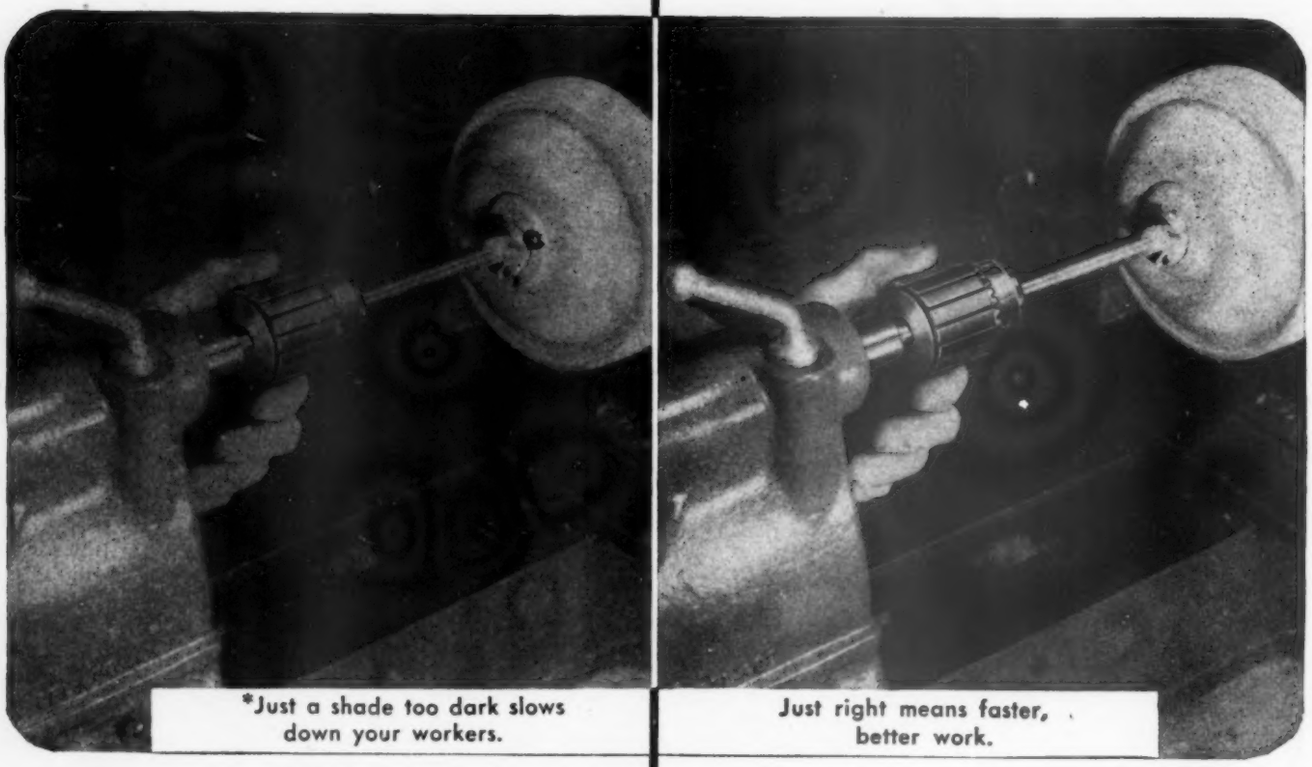
THERE IS A DIFFERENCE

TWIST DRILL AND MACHINE COMPANY
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. • CHICAGO STORE: 570 WEST RANDOLPH ST. • SAN FRANCISCO STORE: 1180 FOLSOM ST.

BORDERLINE VISION*

May be hampering production in your plant!



*Just a shade too dark slows down your workers.

Just right means faster, better work.

Eliminate lighting handicaps with Wheeler Skilled Lighting

THE LIGHTING in your plant may *look* all right at a glance, yet be just a shade too dull or too bright in some places. Watch out!

That may mean that some workmen need two-looks-to-make-*sure* – and waste time. Or that they take chances on one look – *and rejects.* In either case production is hampered and costs go up!

Better work and reduced costs are practically automatic when you install evenly distributed shadow-free light, with efficient Wheeler Reflectors. Product of 64 years of specialized lighting experience, they are engineered to get maximum illumination *from standard lamps;* to stand up longer; to require less maintenance, for they are made of heavy-duty materials and high-grade vitreous enamel only.

Learn how Wheeler Reflectors and skilled lighting can bring you efficient lighting and cut your costs. Send for catalogs showing complete line of incandescent and fluorescent lighting fixtures. **Wheeler Reflector Company, 275 Congress Street, Boston 10, Mass.** Also New York, and principal cities.

Distributed Exclusively Through Electrical Wholesalers

All-Steel Open-End Fluorescent Unit

Available for two or three 40-watt, or two 100-watt lamps. Broad wiring channel with accessible, enclosed ballast. Mounts from chain or conduit, individually or in continuous runs.

RLM Solid Neck Incandescent Reflector

Maximum lighting efficiency for either indoor or outdoor use. Expertly designed, ruggedly built. 75 to 1500 watts.

Wheeler Reflectors

(SKILLED LIGHTING)

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

THIS NEW IMPROVED SUPER LUBRICANT*

Resists Sludge Formation Removes Hard Carbon

IT'S
Naturalube
D.H.D. OIL
FOR DIESEL AND HEAVY DUTY
• Stronger Protective Film
• Greater Penetrative and Adhesive Properties
• Non-Corrosive — Safe
• Adds Power, Saves Fuel, Saves Wear and Shut-down Time
USE IT FOR TOUGHEST LUBRICATION JOBS IN ALL INTERNAL COMBUSTION ENGINES

*Accepted by Leading Engine Manufacturers as a Superior Lubricant

Naturalube D.H.D. is basically different —superior to conventional type oils— because Nature itself has given D.H.D. these essential lubricating properties: (1) A naturally tougher film that has unusual ability to *penetrate* to all moving parts plus the ability to *adhere* to these parts even when engines are idle. (2) Natural solvent properties enable Naturalube D.H.D. to loosen and remove hard carbon from rings, pistons, valves and plugs. (3) D.H.D. is naturally non-corrosive—safe!

In addition, Naturalube D.H.D. is specially reinforced to resist the formation of sludge and lacquer which often clog filters, screens and oil lines. When you use D.H.D. you save wear . . . engines are cleaner . . . rings and valves operate freely for longer periods . . . shut-down time is minimized, and maintenance costs are lower. For complete information about D.H.D., see your local Naturalube distributor or write direct to Lion Oil Company, El Dorado, Arkansas.

For normal service where D. H. D. is not required, use Naturalube Motor Oil (not so heavily reinforced.)

POSITIVE MONEY-BACK GUARANTEE

Lion Naturalube Oils are supported by a positive guarantee of satisfaction. If you do not believe Naturalube to be the best oil you have ever used, Lion Oil Company will return your money.

LION PETROLEUM PRODUCTS

LION OIL COMPANY EL DORADO, ARKANSAS

NATIONAL-STANDARD COMPANY
NILES, MICHIGAN

Wire Braids flat and tubular in Steel or other metal. Tapes and Specialized Wire Products for Tire Beads, Steam Hose Armor, Reinforcement for Oil Well Drilling Hose. Braided Covering for Flexible Tubing, Aircraft and Tank Radio Shielding. Stranded Wire for reinforcing Flat and V Belts. Braided Covering for Electrical Cables. Drawn wire in small sizes down to .002, of Steel, Aluminum, Brass, Monel, Nickel Silver, Stainless Steel, Phosphor Bronze and other Alloys.

WORCESTER WIRE WORKS, DIVISION
WORCESTER, MASS.

High quality Wire in small diameter sizes, down to .006. Round, Low and High Carbon Steel. Annealed, Hard Drawn, Tempered, Bright, Liquor Finish, Tinned, Copper Coated, Cadmium Coated, Galvanized.

THE ATHENIA STEEL COMPANY, DIVISION
CLIFTON, NEW JERSEY

Cold Rolled, High Carbon Flat Steels in widths of ⅛" to 6½", Thickness .0015 to .062 Custom-made Steels—.60 Carbon and higher. Entire range of Annealed, Hard Rolled, Black Tempered, Tempered and Polished or Tempered and Polished with Blue or Straw Colored finish, Best quality Small Flat Springs.

WAGNER LITHO MACHINERY CO., DIVISION
HOBOKEN, NEW JERSEY

Complete lines of automatic equipment—designed, manufactured and installed for can companies and others using sheets in the metal decorating trade. Individual units consist of Roller Coating Machines, Conveyor Type Ovens and Auxiliary Equipment for tandem operation with lithographing presses, etc.

NS
NATIONAL-STANDARD Company
NILES, MICHIGAN

What Does This Trade-mark Mean?

SELDOM does this trade-mark label a stock item. Rather, it identifies a product specifically developed for a special application. It may be a type of steel for piston rings, stainless steel wire for sound recorders, or highly specialized braided wire for automobile tire beads.

Whatever product it is . . . from any one of the four divisions of National-Standard... you can be sure the N-S trade-mark means that the product is the result of: a careful study of the customer's methods of manufacture, an analysis of the performance required, rigid quality control to assure uniformity in every pound of the material developed.

This, plus the willingness of National-Standard engineers to tackle the toughest applications for their specialized products, makes theirs a unique service. Why not put these services to work for *your* benefit?

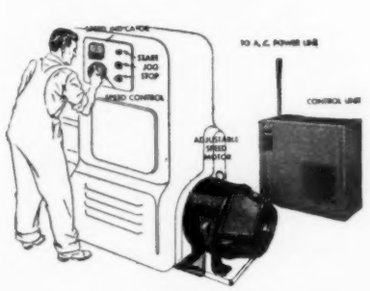
How we can help *you* meet the greatest challenge industry has ever faced

WAGES go up and up, along with other costs. Prices lag behind. Some relief may come from outside sources but, primarily, the problem of pushing production *up* and holding costs *down* must be solved by each individual company for itself. Here lies the greatest challenge industry has ever faced.

One sound answer is increased production through the use of more efficient machinery and methods. And this is where we feel confident we can help you. *We have yet to find the industry where Reliance V★S Drive cannot improve the quantity and quality of output, while lowering costs.*

A Reliance Application Engineer will survey your operations, then show you where and how you can benefit most through use of V★S—*the All-electric, Adjustable-speed Drive, operating from A-c. Circuits.* Just phone the nearest Reliance office or write us direct for Bulletin 311.

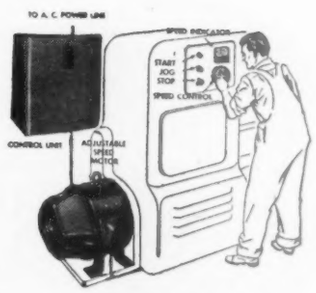
RELIANCE ELECTRIC & ENGINEERING CO.
1056 IVANHOE ROAD • CLEVELAND 10, OHIO
Branch Offices in Principal Cities



ROTATING SYSTEM
(1 to 200 hp.)

RELIANCE V★S DRIVE

Reliance V★S Drive provides unlimited flexibility of machine operation. Starting, stopping, speed changing, reversing, maintenance of proper tension and other controls are exercised automatically or manually from nearby or remote stations.



ELECTRONIC SYSTEM
(1 to 5 hp.)

RELIANCE A-C D-C MOTORS

"MOTOR DRIVE IS MORE THAN POWER"

Bronze bushings of two types, cast centrifugally and precision-finished by Shenango-Penn. These and other shapes, many far more complex, are regularly produced here for reasons outlined below.

IT'S A BETTER PLAN.. if Shenango-Penn Centrifugally Cast Parts are in it!

HERE'S WHY! Parts cast centrifugally by Shenango-Penn, and machined by us too, if you wish, are inherently much stronger and tougher, have finer, more uniform grain structure than ordinary cast parts of the same analysis. Centrifugal pressure gives the metal greater density, raises Brinell hardness 2 to 5 points, increases tensile strength by 8 to 20 per cent. At the same time, the Shenango-Penn process prevents sand inclusions, blow holes, porosity.

Those are a few of the reasons why more and more builders of machinery and equipment are turning to Shenango-Penn for all castings and parts that are essentially symmetrical in shape. It's a flexible process, not by any means limited to parts of simple circular section. Many variations are possible including flanges, bosses, lugs and other projections.

Yes, any product plan that includes Shenango-Penn castings instead of ordinary ones is indeed a *better* plan. It always means a more durable product, better able to withstand pressure, friction, abrasion, corrosion and all kinds of stresses. It also means lower production cost. Don't you think it's worth looking into?

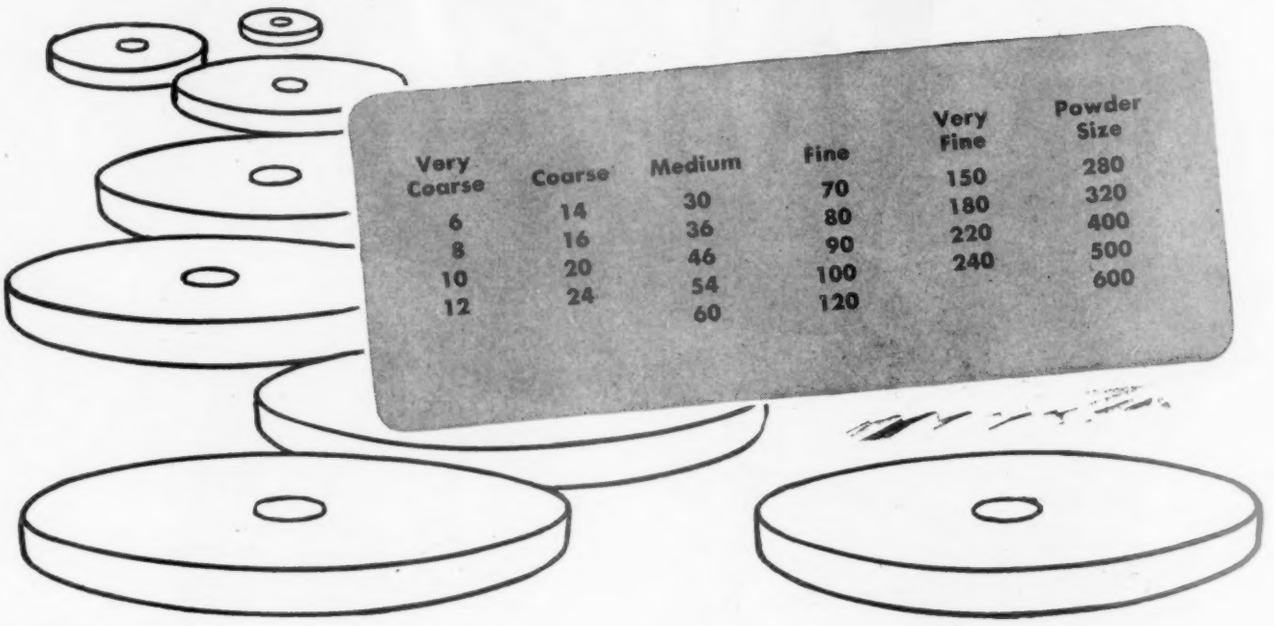
Bulletin No. 143 gives full information on Shenango-Penn centrifugal castings including specifications and analyses of the various alloys available, and also tells about our modern machining facilities for those users who desire semi-machined or finished parts. Send for this free bulletin.

SHENANGO-PENN

SHENANGO-PENN MOLD COMPANY
2463 West Third Street • Dover, Ohio
***Executive Offices:* Pittsburgh, Pa.**

ALL BRONZES • MONEL METAL • ALLOY IRONS

How do you tell which grit to use?



Listed is a commercial classification of standard abrasive grit sizes. They come in a wide range... from 6 classified as very coarse to 600 classified as powder size. And, the variety is further extended by special sizes and combinations. Yet, each one is designed to do a specific job better than any of the rest.

To complicate correct choice even more, there is a long list of variable factors to consider. Among these, you'll find wheel speed, machine condition, specified tolerances, material analysis, related production schedules, and a host of others.

The correct selection hinges on the review which is given to all the controlling factors. Yet...grinding efficiency and economy depend on the right answer.

That's why the Carborundum Company has put together a practical program... a service now deemed essential by many concerns who have been successful in getting improved grinding in terms of better finishes, or at lower cost.

Your nearest contact to this service is a CARBORUNDUM representative You'll find him willing and helpful. Through a sound knowledge of abrasives and first-hand experience of their use and application in the many plants he contacts, he is able to make intelligent recommendations and suggestions. On the more uncommon problems, he can even call on our Abrasive Engineers who are more fully qualified to tackle the tough problems. And, sometimes, the answer comes from the modern laboratories at CARBORUNDUM—where scientists and technicians probe for new information on abrasives, practices and developments.

Here is a sound approach—not only to getting the right grit—but the right combination of grit, bond, grade, structure and all the other parts that make up a grinding wheel. *Plus* knowledge and experience invaluable in modern grinding methods and procedures. It's easy to use. It incurs no obligation. It makes sense. The Carborundum Company, Niagara Falls, New York.

A good rule for good grinding... **CALL IN**

CARBORUNDUM

TRADE | MARK

BONDED ABRASIVES

WHEELS
- Silicon Carbide
- Aluminum Oxide
- Diamond

Cylinder Hones
Sticks, Stones & Rubs
Specialties

COATED ABRASIVES

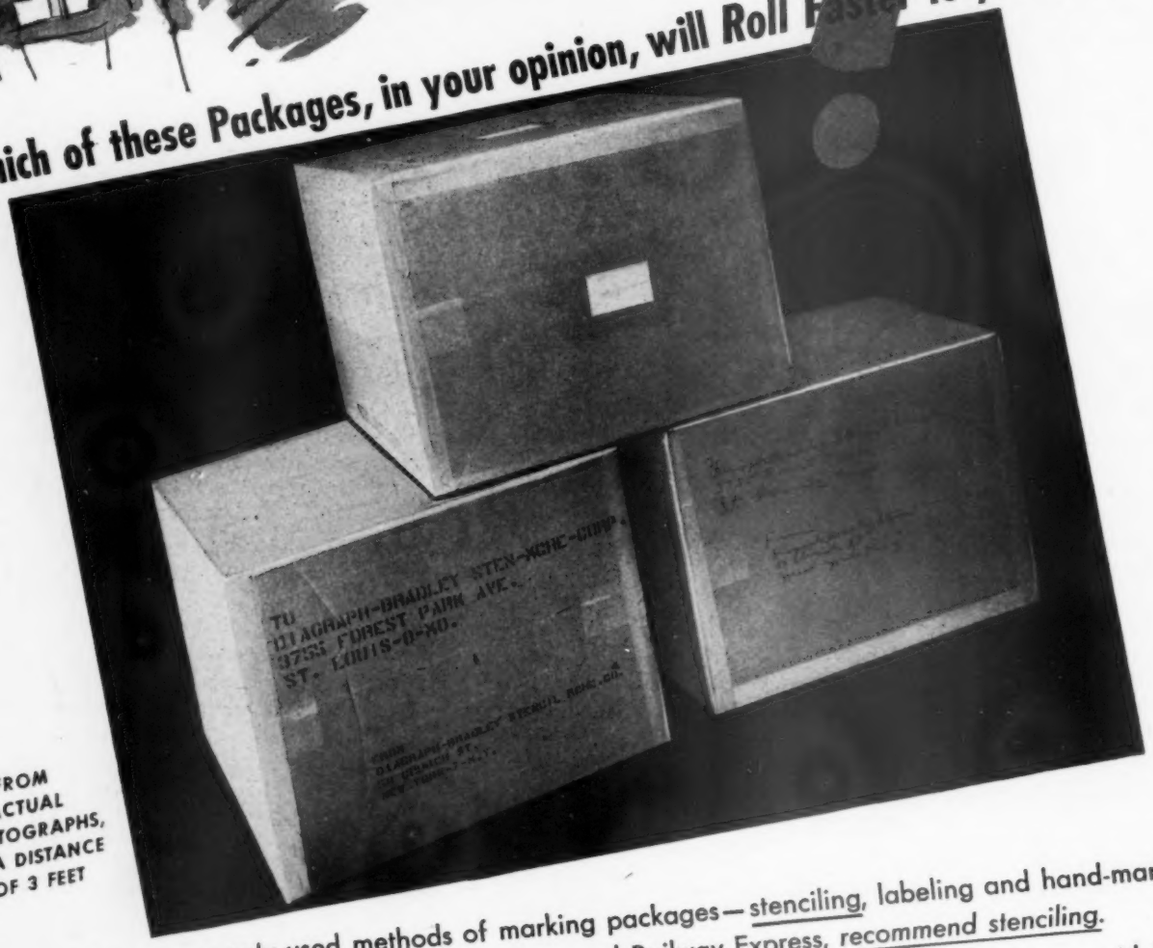
Paper, Cloth and Combination
Sheets, Rolls, Discs

ABRASIVE GRAINS AND COMPOUNDS

for:
Polishing
Lapping
Pressure Blasting
Finishing

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

Which of these Packages, in your opinion, will Roll Faster to your customer?



FROM ACTUAL PHOTOGRAPHS, AT A DISTANCE OF 3 FEET

These are three commonly used methods of marking packages—stenciling, labeling and hand-marking—common carriers, such as the railroads, truckers and Railway Express, recommend stenciling.

Why take a chance—rain and damp weather obliterate type or hand written labels—avoid hand addressed mistakes—illegibility—labels coming off—lost shipments—delayed shipments.

Stencil address your shipments to keep your packages out of the carriers' Lost Shipment Warehouse.

Stenciled Shipments Roll Faster

THE WORLD'S OLDEST AND LARGEST MANUFACTURER OF STENCIL CUTTING MACHINES

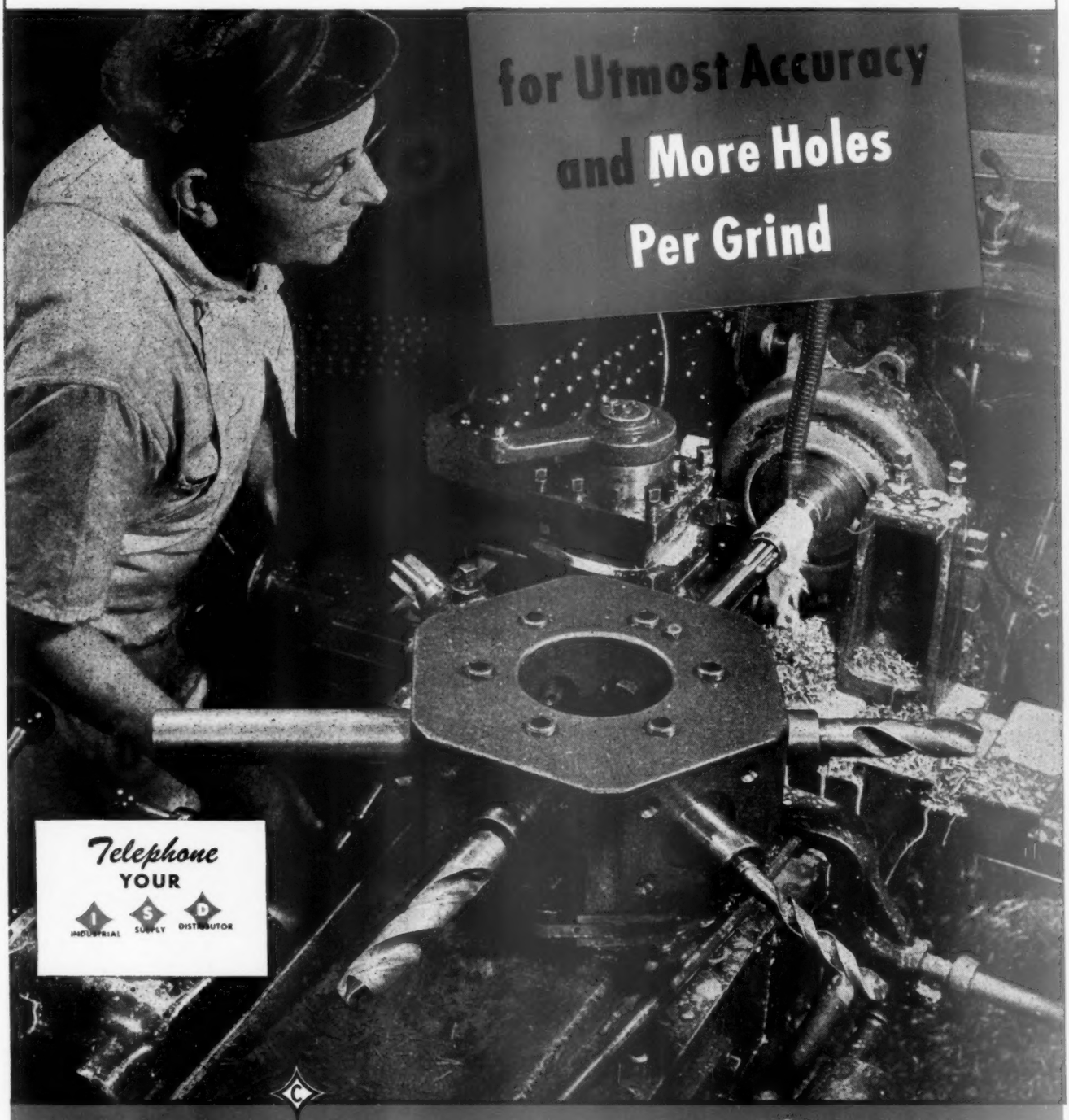
D.B. REG U S. PAT OFF

DIAGRAPH-BRADLEY
STENCIL MACHINE CORPORATION
ST. LOUIS 8, MISSOURI

DISTRIBUTORS IN PRINCIPAL CITIES—SEE CLASSIFIED SECTION—TELEPHONE DIRECTORY—STENCIL CUTTING MACHINES

OVER 100 D-B ITEMS FOR THE SHIPPING ROOM

CLEVELAND Drills and Reamers



The CLEVELAND TWIST DRILL COMPANY
1242 EAST 49TH STREET
CLEVELAND 14

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

70 THOMAS ST., NEW YORK 7 • 9 NORTH JEFFERSON ST., CHICAGO 6 • 650 HOWARD ST., SAN FRANCISCO 5
2929 EAST GRAND BLVD., DETROIT 2 • 1902 NORTH FIELD ST., DALLAS 1
E. P. BARRUS, LTD., LONDON W. 3, ENGLAND

CHASE LINERS

* Stop Liner Breakage!
* Stretch in All Directions!

Chase Liners are better, more resilient, more flexible! Here's why: they're crinkled for vertical elasticity *and* pleated for horizontal elasticity! Result: no more broken liners nor costly damage to contents due to liner failure or breakage.

Check on Chase Liners today. They're the crinkled and pleated liners that assure savings . . . that actually cost no more!

CHASE BAG CO.

GENERAL SALES OFFICES
307 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MINNEAPOLIS
ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE • PITTSBURGH
BUFFALO • KANSAS CITY • MEMPHIS • GOSHEN, IND. • PHILADELPHIA
NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY • OKLAHOMA
CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS
CHAGRIN FALLS, O. • HUTCHINSON, KAN. • WINTER HAVEN, FLA.

F.O.B. filosofy of buying

LO, THE POOR Purchasing Agent! Art Director Harry T. Bishop of the San Diego (California) *Tribune-Sun* has caught a world of pathos as well as grim humor in the candid camera shot which appears herewith. And a sympathetic headline writer on the same journal has caught the spirit of the situation in his alliterative caption — "Confused Custodian Down on Count." The accompanying story is a familiar one:

"In a bewildering wilderness of wartime civilian defense equipment stands Ray Bartlett, assistant city purchasing agent and local property officer for Uncle Sam during the

war emergency period, wishing Uncle Sam would tell him what to do with all the collected stuff. The equipment occupies a large space in the city warehouse at Twentieth and B Sts., awaiting government orders on disposal. Bartlett wishes Uncle Sam would hurry. The city needs the space."

• •

REALISTIC economist is Robert Vanderpool. Discussing the pros and cons of price control in a recent issue of his weekly letter, he quotes a statement from the office of the National Association of Purchasing Agents to the effect that a period of complete chaos would follow the removal of all price controls under prevailing conditions, and he subjoins the parenthetical comment: "and there is no one closer to the situation than the buyers."

• •

IT HAS BEEN a matter of considerable concern to this organization in recent months to get the bigger and better PURCHASING safely through the mail to our readers. We know that we are not alone in this problem, for a couple of issues ago when some wrappers failed in our Canadian mailing, Bob Hannegan's Post Office minions coyly cooperated by transposing copies of this journal and *Harper's Bazaar*, to the amazement of the recipients. We deeply regret this innocent error, but are delighted to pass along one gem from the resulting correspondence:

Dear Sirs:

I have no wish to appear captiously critical or to appear lacking in appreciation of the multitudinous problems confronting publishers when the times are so sadly out of joint, but I must make it quite clear that I resent having my subscription switched to *Harper's Bazaar* (or was it *Vanity Fair?*), which unfortunate occurrence apparently took effect as of the February issue. I must warn you that if I am not provided with a copy of the February issue of PURCHASING immediately I propose to enter suit for the sum of $2,985,782,392.99 without further notice. (Breach of Contract).

Yours resentfully,
WILLIAM BUTLER

Dear Mr. Butler:

It might have been, God forbid, *Esquire*, in which event our faces would be even more crimson than they are now.

Your threat to enter suit for $2,985,782,392.99 is the nicest compliment paid PURCHASING in a long while—and we have had some honeys. Another copy of PURCHASING for February is being mailed to you post haste in an effort to forestall the suit.

Apologetically yours,
ARTHUR H. DIX
Manager, Reader Service

CAPTAIN JACK SMALL, Civilian Production Administrator, appraises what it takes to be a purchasing agent in these parlous times: "You need the instincts of a bloodhound to sniff out supplies, the finesse of a diplomat to sign a contract, and the patience of Job to wait for deliveries to come through."

• •

WE HAVE frequently stressed the importance of proper timing as a factor in good purchasing practice. But apparently we have

ourselves been guilty of a lapse on the same score. H. E. Wilson of the Carolina Power & Light Co., Raleigh, N. C., sends us back a tear-out of Trent's recent cartoon in which a convivial purchasing agent issues the blanket order, "Set 'em up for everybody, Tom. I said No to a salesman for the first time since 1940." Reader Wilson's comment: "Try this again in 1949. Unless this fellow is retiring, he's crazy."

• •

RECOGNIZING the need for fast action in taking advantage of surplus property offerings, the eminently progressive Michigan State Purchasing Division has established a revolving fund of a million dollars, free from the routine red tape of budget appropriations and formal bidding. This fund has been used to excellent purpose by food buyer Otto Perry. Rather on the slim side himself, Mr. Perry takes pardonable pride in reporting that his charges in the state institutions are among the best fed groups in our entire citizenry, despite the shortages that have plagued the rest of us from time to time.

AN IMPORTANT ANNOUNCEMENT

We are proud to announce the consolidation of the General Screw Manufacturing Company, Sterling Bolt Company of Cincinnati, and Badger Bolt Products of Milwaukee, with the Sterling Bolt Company of Chicago.

All units will operate under the name of the Sterling Bolt Company, 209 W. Jackson Blvd., Chicago 6, Illinois. Present offices will be maintained at Milwaukee and Cincinnati, and the sales personnel of all units will remain unchanged.

This consolidation is another of the many forward steps we have taken in our untiring efforts to insure increasingly better service on a most complete line of bolts, nuts, screws, rivets and washers.

Here, in one thoroughly coordinated organization, will be every facility for better and more effective fastening consultation, manufacture, warehousing and delivery. For you, the purchasing agent, there will be greater benefits than ever before in dealing with Sterling Bolt Company, for 25 years a foremost national supplier of bolts, nuts, screws, rivets and washers.

STERLING BOLT COMPANY

CHICAGO, ILLINOIS—209 W. JACKSON BLVD.

MILWAUKEE, WIS.—161 WISCONSIN AVE.

CINCINNATI, OHIO—UNION TRUST BLDG.

FACTS YOU SHOULD KNOW ABOUT ELECTRODES

Are you familiar with the mechanical properties of electrodes? . . . Do you know the different types of electrodes for welding cast iron — mild steel—high tensile, low alloy steels . . . which electrode will do the job better, faster — at less cost?

This, and other vital information is all contained in Airco Catalog No. 120. Compiled by leading technicians in the field, this definitive work gives authentic, understandable information on electrodes . . . application, welding procedure, mechanical properties and specifications are thoroughly covered.

Every metal man will find almost daily use for this big, helpful manual. It will save him time, effort and needless worry. It will answer almost any question regarding the proper electrode for welding any particular base metal — for any given type of work.

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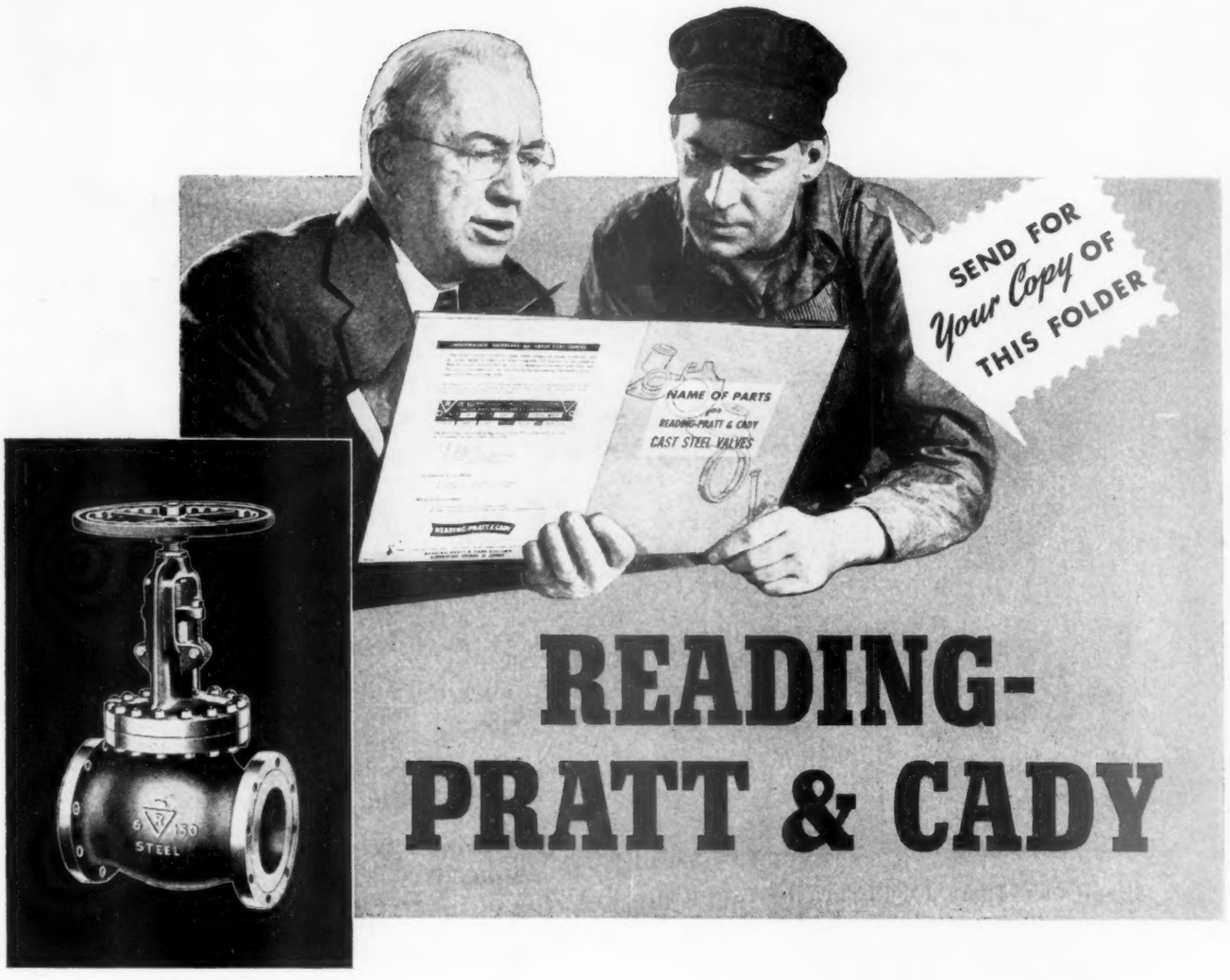

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This six-page, file-size folder contains much useful information in convenient form. Here are the standard names of all component parts of steel gate, globe and check valves. Cut-away pictures make it a very simple matter to identify each part. Send for your copy.

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"These mold parts are for the aircraft and automotive industries. We use Speed Case and Speed Treat Plate exclusively for all rubber and plastic molds."

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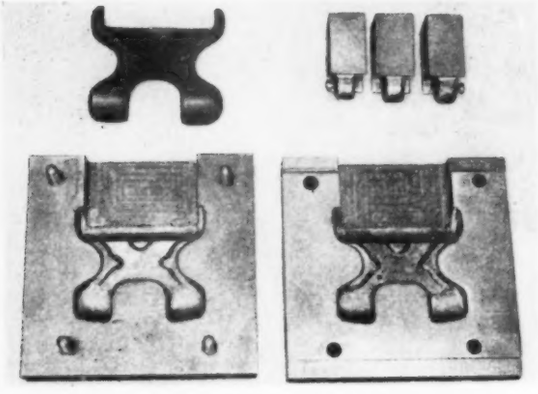
10 Reasons why-



Speed Case **Plate (X-1515), the fastest machining, open hearth steel plate made, not only offers the advantage of fast, accurate machining, but also is the ideal steel for carburizing. It responds to all standard SAE recommended practices for case hardening of open hearth carbon steels.**

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6 Through elimination of costlier high alloy steels.

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7 Through excellent physical qualities.

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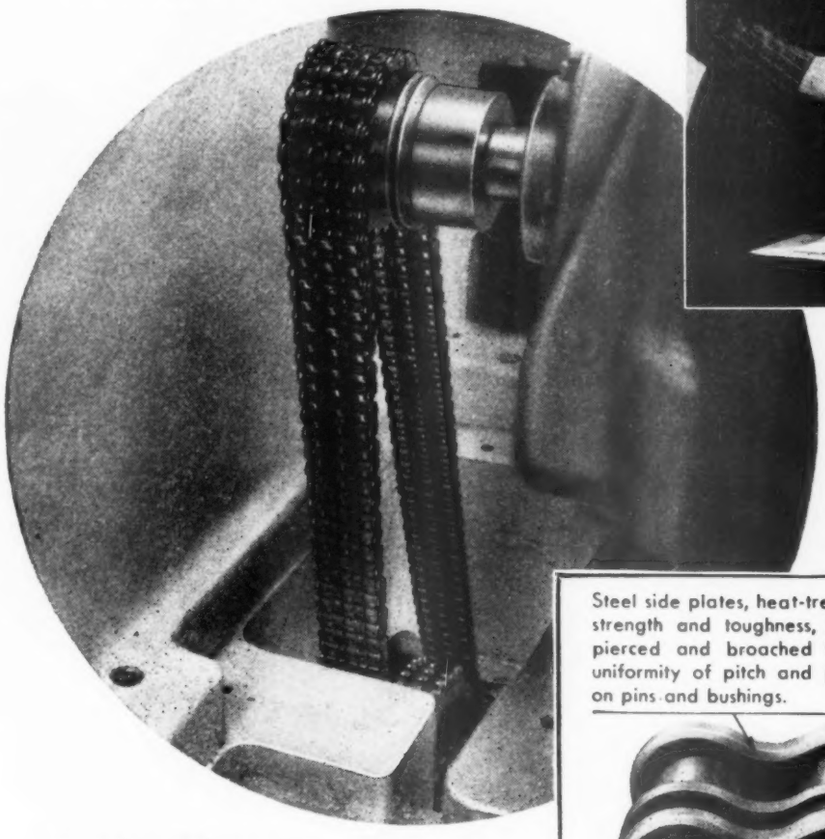
DO YOU KNOW ROLLER CHAIN . . .

absorbs shocks from your machines?

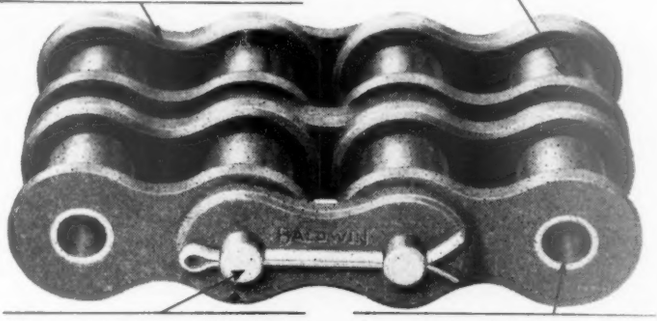
① **NOT ONLY** do roller chains transmit positive power, but they also absorb the shock loads of machine operation.



② **ROLLER CHAINS** have an inherent amount of elasticity which enables them to absorb shocks. This, plus the cushioning effect of the oil film between working parts, absorbs shocks that might otherwise damage your machines. With Baldwin-Rex roller chains, you have no slipping or "creep" problems.

Steel side plates, heat-treated for strength and toughness, blanked, pierced and broached to insure uniformity of pitch and press fits on pins and bushings.

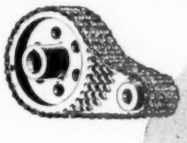
Alloy steel roller heat-treated for extreme toughness and resistance to wear, then ground to size.



Alloy steel pin, case hardened, ground for accuracy, superior bearing surface. Shorter pitch chains furnished with riveted construction.

Alloy, case hardened steel bushing ground for accuracy and press fits in side bars.

③ **NOTICE THE QUALITY** features listed in the illustration at the right. Here's further reason why you can rely on Baldwin-Rex for long life. It is easy to install . . . requires little adjustment and the total cost of chain and sprockets is usually lower than any other type of power transmission equipment.



The Baldwin-Rex Man can assist you in the solution of your specific drive problem. See or write him for complete information or send for catalogs on Baldwin - Rex roller chains.

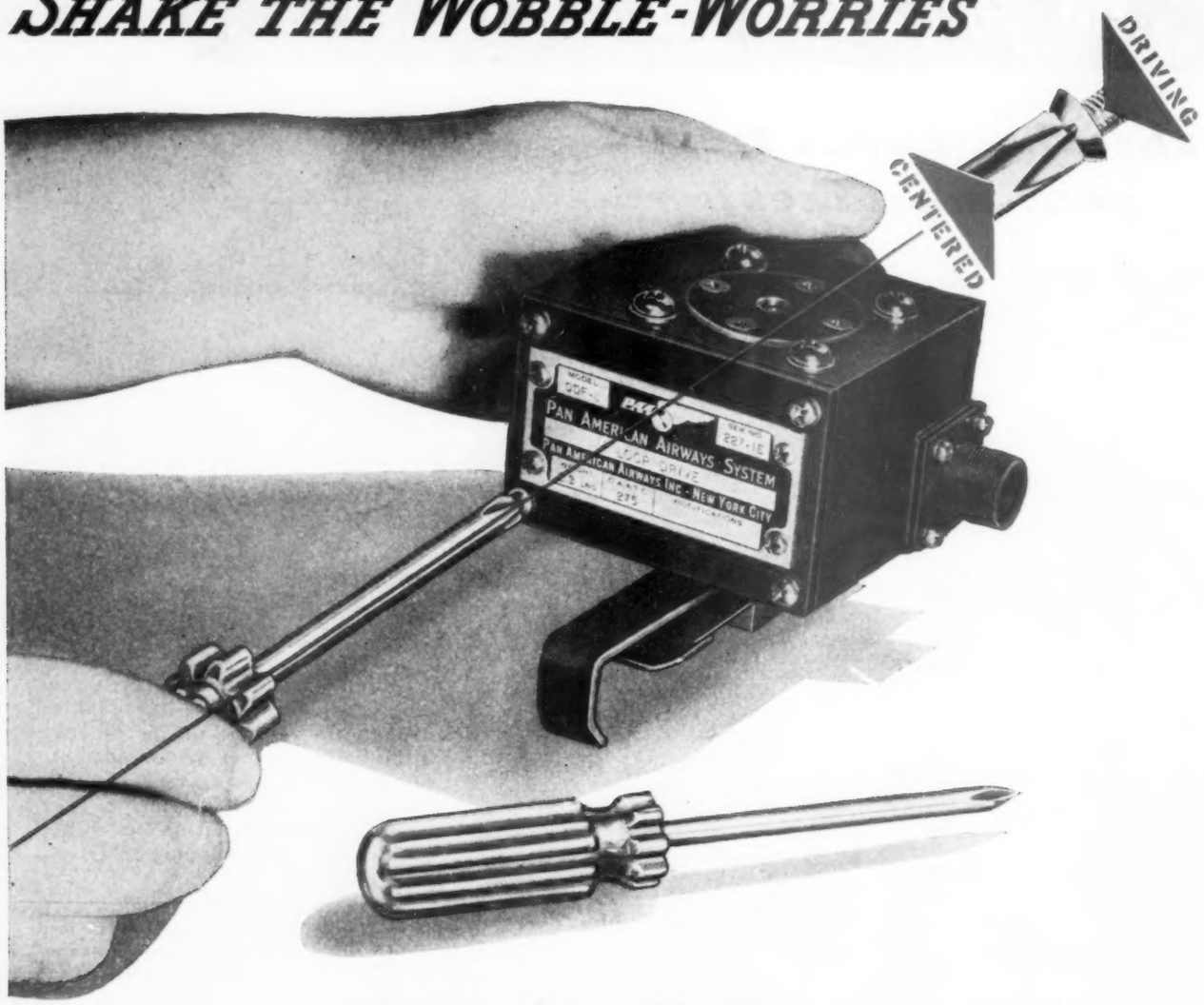
BALDWIN·REX

ROLLER CHAINS

BALDWIN-DUCKWORTH DIVISION OF CHAIN BELT COMPANY

366 Plainfield Street, Springfield 2, Massachusetts

SHAKE THE "WOBBLE-WORRIES"



. . . with Corbin-Phillips Screws!

Drive an ordinary screw and you'll get the "Wobble Worries" . . . fear that the driver will slip from the slot and jimmy up the product. Wobble Worries slow you down!

Wobble Worry accidents are wasteful and costly. They have no place in a competitive economy. Eliminate them once and for all with the "Centered Driving" of Corbin-Phillips Screws.

With Corbin-Phillips, the bit is anchored in the screw both ways — and the screw is driven true all the way. Spoiled work stops — production goes up — and Wobble Worries go out the window.

And remember, Corbin-Phillips Screws are noted for their *uniformity*.

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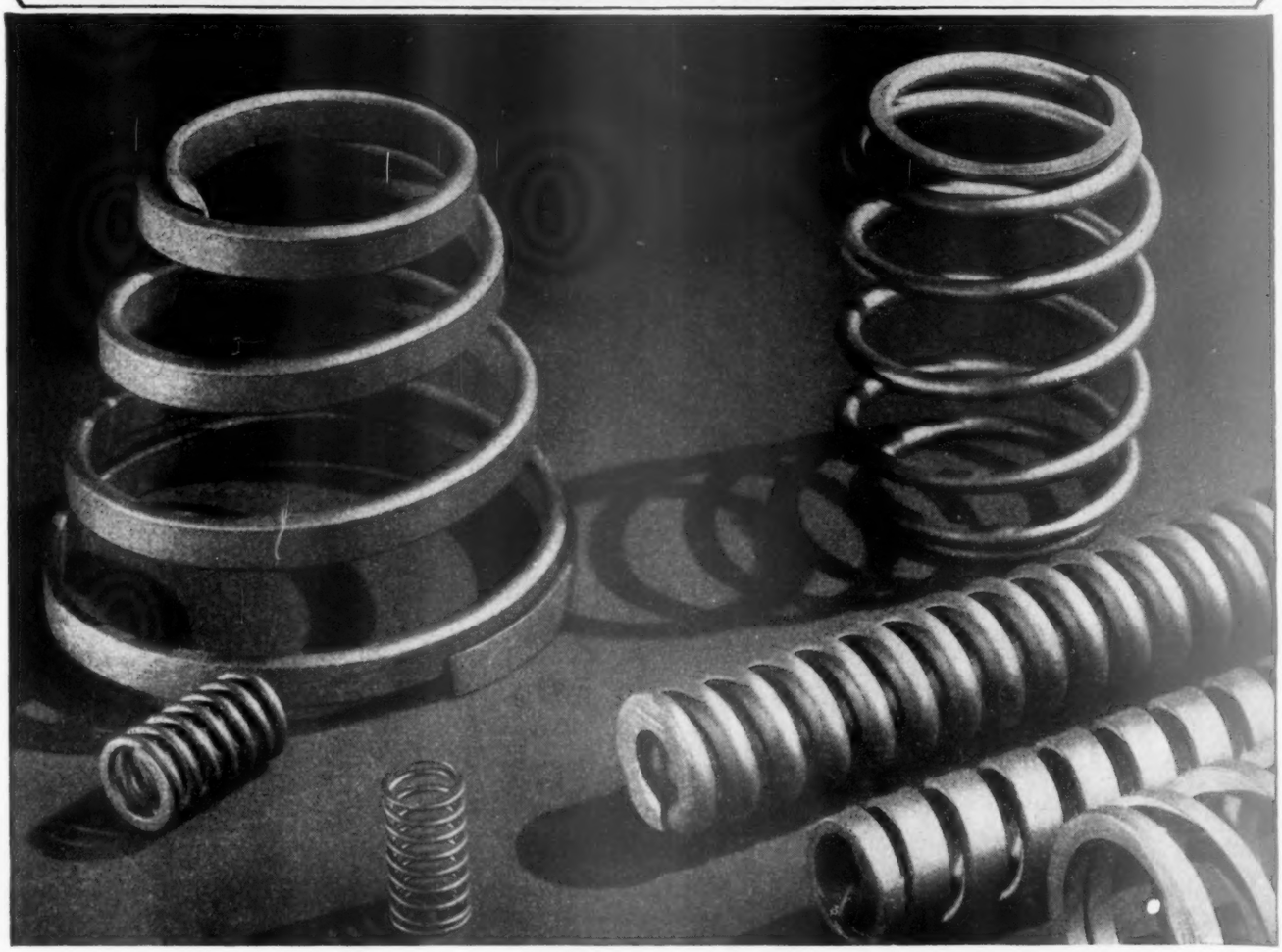
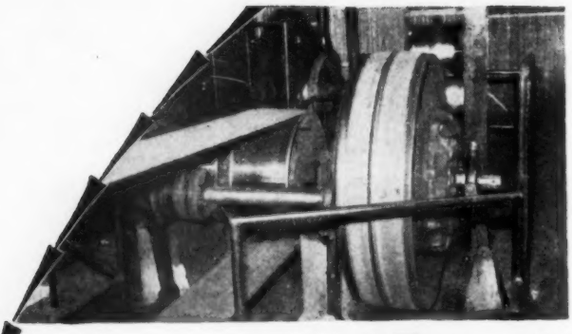
"TWISTING" A WAY INTO TIGHT PLACES

Mechanisms used to actuate war equipment had often taxed the full resources of springmaking science in crowding spring action into small spaces. In the case of large springs, the need for reducing total weight yet maintaining the same load resisting characteristics involved careful choice of material as well as shape of spring. While from a spring-life standpoint such crowding should be minimized, Gibson engineering skill has time after time built rugged, precision springs to meet just these severe conditions. No matter where or how your spring must work, it pays to have at your service, the all-round experience of Gibson spring engineers.

The WILLIAM D. GIBSON CO.
DIVISION OF ASSOCIATED SPRING CORP.
1800 Clybourn Avenue, Chicago 14, Illinois

GIBSON-SPRINGS





Cut Costs THESE WAYS . . . . .

. . . . . WITH Republic Transmission Belts

Transmission belt service factors which cut costs during operation are as important to ultimate economy as properties which afford longer belt life. Savings in power and elimination of downtime, frequently required for shortening belts with not enough stretch resistance, are typical results of completely efficient belting. The construction of Republic Transmission Belting is carefully engineered to provide this economy in operation as well as long service life under the most severe conditions. Many users, for example, consistently specify Republic's Challenger Reprene for maximum pulley traction on heavy or shock drives, freedom from stretch and fastener trouble, similar elements of on-the-job performance. Whether your belt problems involve operating inefficiencies or actual premature failure, your Republic Distributor can solve them for you, cut costs with a recommended grade of Republic Transmission Belting.

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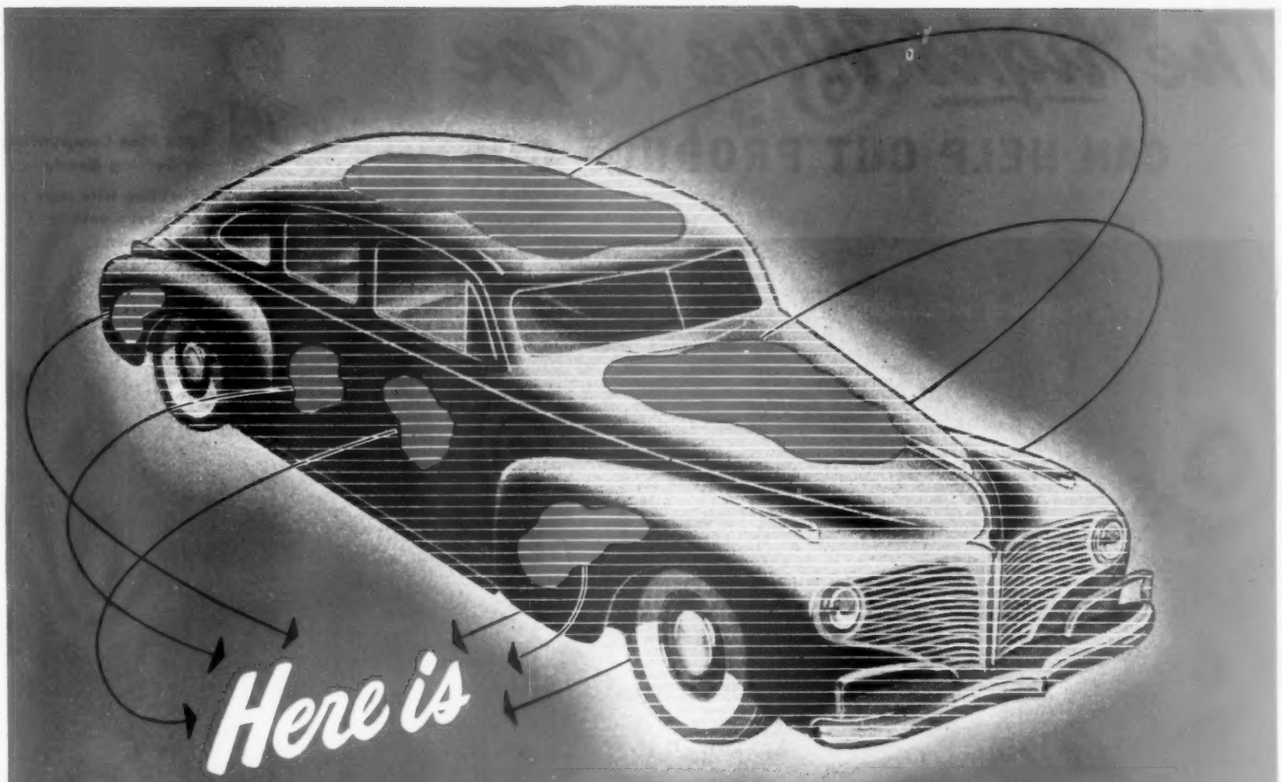

NEW AND BETTER CONTROL for Vibration Noise

WITCO® VIBRATION DAMPENERS provide maximum sound deadening effect with minimum weight. A coating of ½ pound per square foot stops metallic body noises by reducing vibration at the rate of 12 or more decibels per second (thick plate method) at all ordinary outdoor temperatures. Slump and adhesion tests satisfy the highest automotive standards.

Witco Vibration Dampeners protect metal surfaces against water, salt, and acid corrosion with a fungus-proof coating that seals seams and cracks. Easily applied over bare, slightly oily, primed, or painted surfaces. These materials air-dry quickly into a durable, nonflammable coat . . . dry enough to handle in a few minutes and hard in a few hours.

Witco Vibration Dampeners are available in standard, high efficiency, and abrasion-resistant grades suitable for use on doors, rear quarter panels, deck lids, roof panels, hoods, floors, fenders, and other car parts.

Technical data and samples will be supplied on request. Write today.

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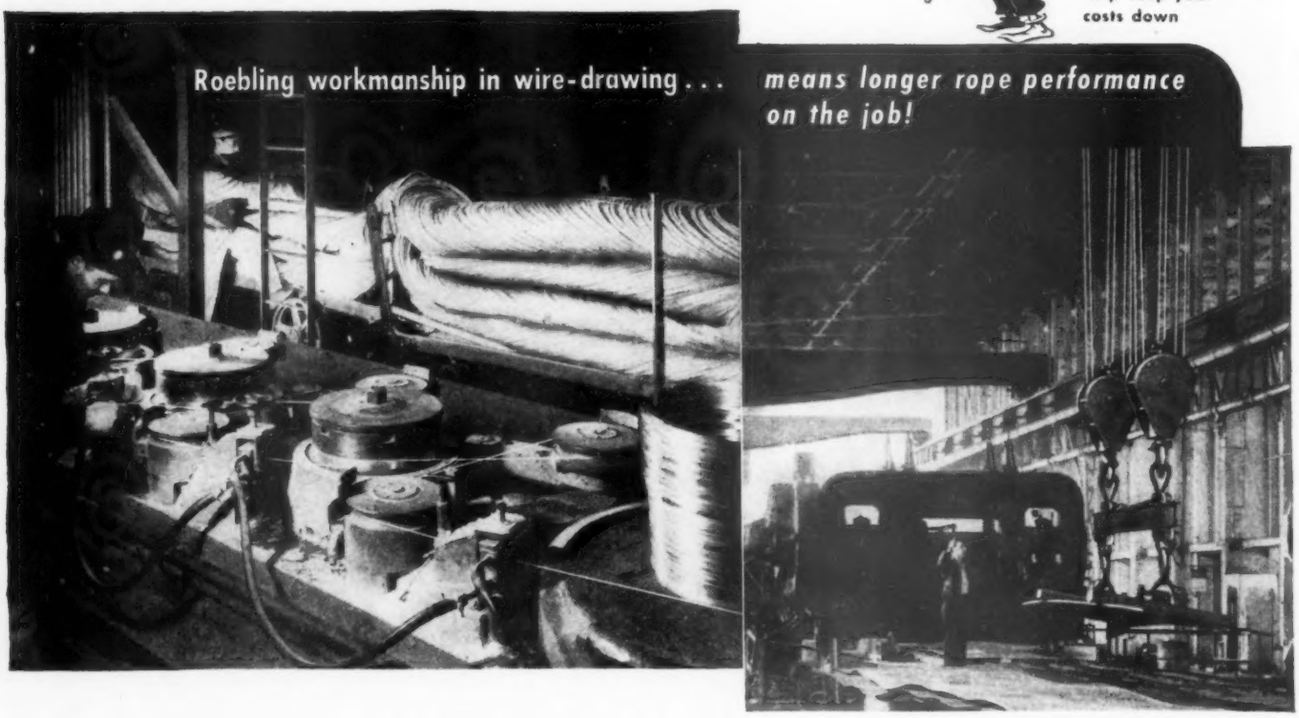
The right Wire Rope

CAN HELP CUT PRODUCT COST

Old Man Competition Is Getting Ready . . .

Roebling wire rope can help keep your costs down



TODAY, business is returning to "normal" peacetime conditions. But it's far from the pre-war normal. Material costs are up. Labor costs are higher. Operating costs *must be held down.* One way to help hold them down is to specify Roebling "Blue Center" Steel Wire Rope.

Here's a tough rope that stands up under shocks, strains or high speeds. Specify it in the right construction and you'll have long-life wire rope adding efficiency to your shop hoists and cranes.

Whether your needs call for preformed or non-preformed wire rope, Roebling engineers can help you save . . . with sound advice on rope selection, installation and operation. Ask our nearest branch office about it.

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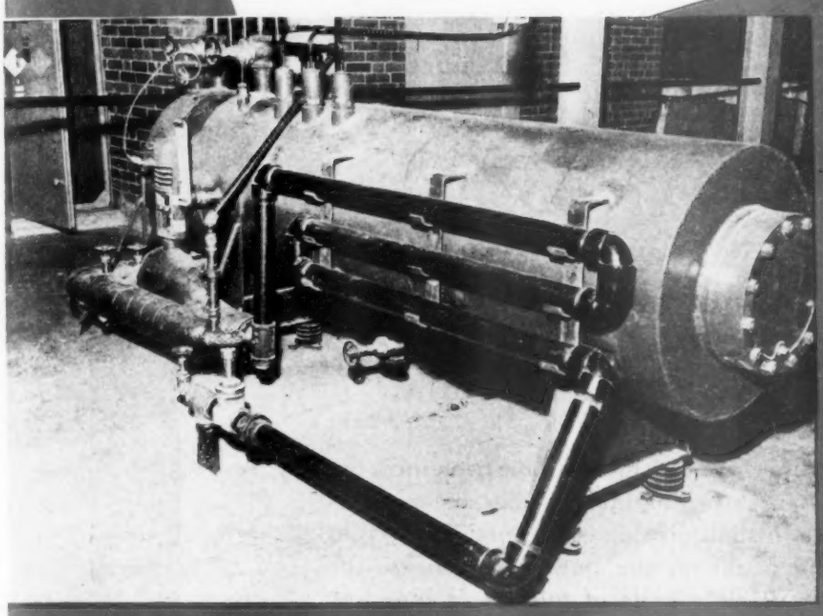
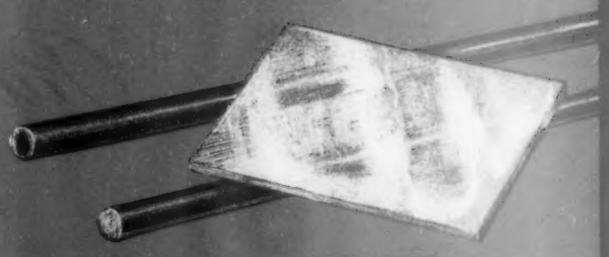
FOR *Established* PERFORMANCE WRITE "*By Commercial*" ON YOUR ORDERS FOR INDUSTRIAL PLASTICS

SARAN PIPE, TUBING AND FITTINGS

Strong, tough and durable, yet amazingly light in weight, Saran Plastic Pipe and Tubing are also resistant to most acids, chemicals, and solvents. It's the ideal piping system for modern industrial installations. Fittings are available in standard sizes.





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"Commercial" keeps a full stock of plastic sheets and rods on hand in both Saran and Polystyrene to cover a wide variety of your requirements.

ETHYL CELLULOSE CABLE SUPPORTS

Light-weight, non-shorting, non-cutting and non-corroding, this Ethyl Cellulose Loop Type Support Clip C.P.C. 742, Army-Navy Aeronautical Standard for AN 742, is the plastic clip which is so popular in aeroplane and other electrical wiring construction.

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Other products "By Commercial" include plastic rope, tape and trim. New plastic products are being constantly added to our line as they prove their worth in exhaustive tests.

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In a competitive age, low cost production provides the only reason why these industries select, specify and use Standard Red Shield Drills.

If you are concerned with production costs, why not talk with the Standard Man. Whether factory or mill supply distributor representative, he knows his business. He can give you also the benefits of our 65 years' experience in solving tough drilling, tapping, reaming and milling cutter problems. His services and suggestions are yours without cost or obligation. For prompt attention, call your Mill Supply Distributor or write

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FOR some time we have suggested that manufacturers might save by Standardizing on Shield Brand Drills, Reamers, Taps, Dies, Milling Cutters and special tools.

We make these tools in one plant, under one management, with the same laboratory control of materials, the same skilled supervision, the same rigid standards of craftsmanship, test, and inspection.

Result, all are uniform in economical performance, all carry our Shield Brand as an assurance of merit.

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Our representatives, and those of our Mill Supply Distributors from coast to coast are available to make suggestions if you desire. Call your Mill Supply Distributor, or write

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BETTER PREPARE TODAY . . . . than regret tomorrow

This manufacturer plans to give his products a sales advantage through proper package design. That's why he's interested in the booklet, "Pack To Attract." This booklet might well mean a sales rebirth for your products, too. For your copy, write The Hinde & Dauch Paper Company, Executive Offices, 4608 Decatur St., Sandusky, Ohio.

TWENTY-THREE IDEAS FOR ONE LETTER

Perhaps you have thought: "How can I increase my sales through better packaging?" You will find the answer in "Pack To Attract," a booklet containing 23 packaging ideas that lead to more profitable packaging procedure. It shows how corrugated board, in the hands of H & D Package Engineers, is transformed into sales packages that protect in transit and attract at point-of-sale. It shows how modern packaging has become an outstanding sales influence. Get your packaging ready now — send for your copy of "Pack To Attract." The Hinde & Dauch Paper Company, Executive Offices, 4608 Decatur Street, Sandusky, Ohio.

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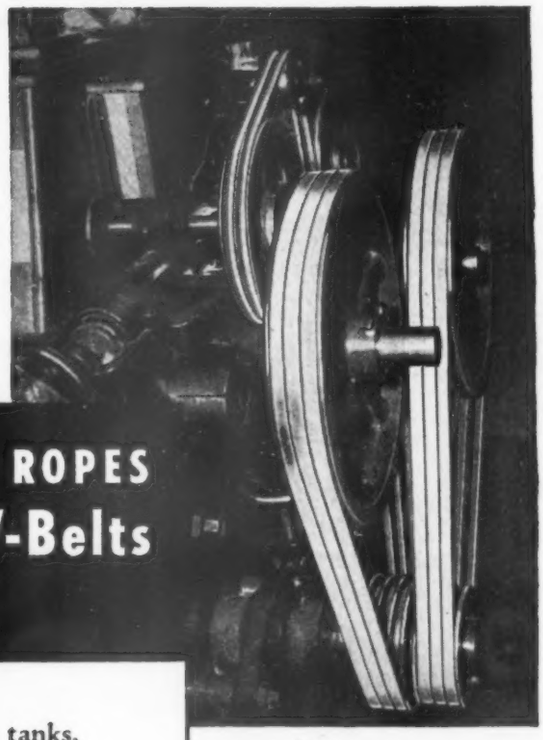
Here's an important fact



GATES *Standard* VULCO ROPES are TODAY *Outwearing* any V-Belts Ever Built Before!

The simple fact that during the war our Army's tanks, tractors and self-propelled big guns required V-belts of a strength and durability never thought possible before is bringing substantial benefits to Gates V-belt users today. That is because Gates developed these greatly superior V-belts for our combat units—and here is why this fact is now important to YOU:--

with this simple reason behind it

Every improvement developed by Gates for U. S. Combat Units— and many later improvements, also—have been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

As a result, *long before the war was over,* you were getting in your Standard Gates Vulco Ropes a product built to far higher service standards than any V-belts ever built by anyone before the war.

And the improvement by no means ended there. Through continuing *specialized* research, the service qualities of these superior Gates Vulco Ropes have been still further improved as all of Gates facilities and energies have been returned to the service of industry.

These are the simple reasons why the standard Gates Vulco Ropes you are getting today are delivering far better service than any V-belts ever built before!

THE GATES RUBBER COMPANY
DENVER, Colorado
World's Largest Makers of V-Belts

All Gates V-Belts are Built With *The Patented* CONCAVE SIDE

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THE MARK OF SPECIALIZED RESEARCH

466

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries

ONLY ONE WAY TO *Correctly Tension* A STUD OR BOLT

Snap-on TORQOMETERS

insure accuracy — tell tension as bolt is tightened...

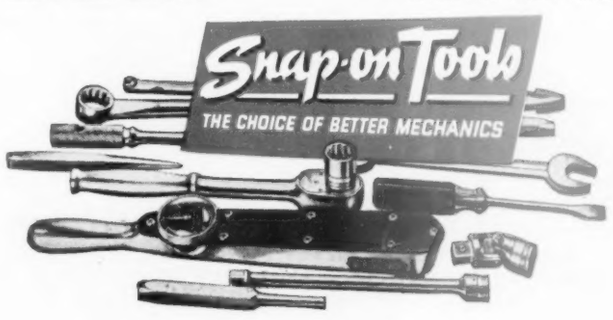
WHERE specifications call for accurate, *uniform* stud or bolt tension, Torqometers should *always be used.* "Guesswork" tightening is an open invitation to all the troubles that follow mechanical distortion . . . wasted power, dangerous wear, breakage of parts. Even highly skilled mechanics cannot be expected to approximate specified pressures.

With Snap-on Torqometers any worker can tighten bolts to the exact foot-pound of tension *every time...* and on delicate mechanisms, to the *exact inch pound.*

He *sees* the applied torque as the bolt is tightened . . . as easily as reading a watch.

Everywhere in industry Snap-on Torqometers are being adopted as standard wrench equipment for precision assembly and maintenance operations. Available in a complete range of sizes from zero to 30 in. lbs., up to 2,000 ft. lbs. Send for Snap-on catalog of power and hand wrenches for industrial production and maintenance.

SNAP-ON TOOLS CORPORATION
8048-F 28th AVENUE KENOSHA, WISCONSIN



6 WAYS WALDES TRUARC RETAINING RINGS IMPROVED GENERAL EXCAVATOR'S FAMOUS "TYPE 10"

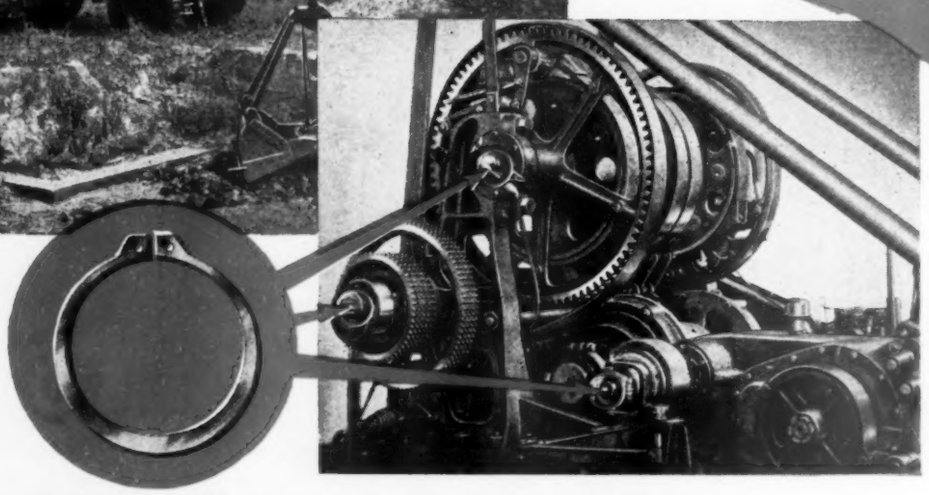
GENERAL EXCAVATOR'S TYPE 10 IN ACTION

An amazing time saving money saving machine. "Type 10" is *precision* equipment—a revolutionary development in excavating machinery. It's one of many products—large and small that have the design economy and greater work efficiency of Truarc rings.

GENERAL EXCAVATOR CO.
Bulletin

Use of Truarc retaining rings on our Type 10, model 105—

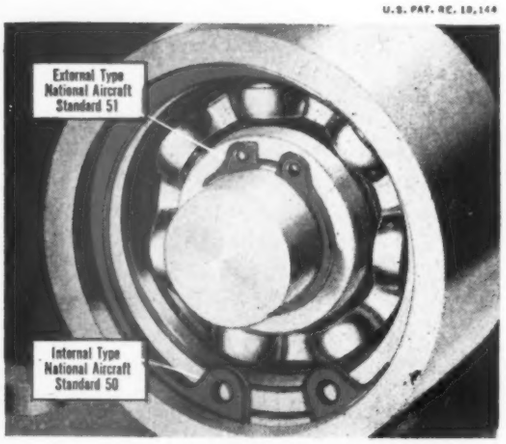
1. Gives better integrated construction
2. Simplifies and provides permanently tight assembly on all major shaft assemblies
3. Eliminates bulky lock washers and bolts
4. Speeds production—reduces cost
5. Makes possible greatest design economy with maximum power and efficiency
6. Stands up under the heavy stresses required in our machines



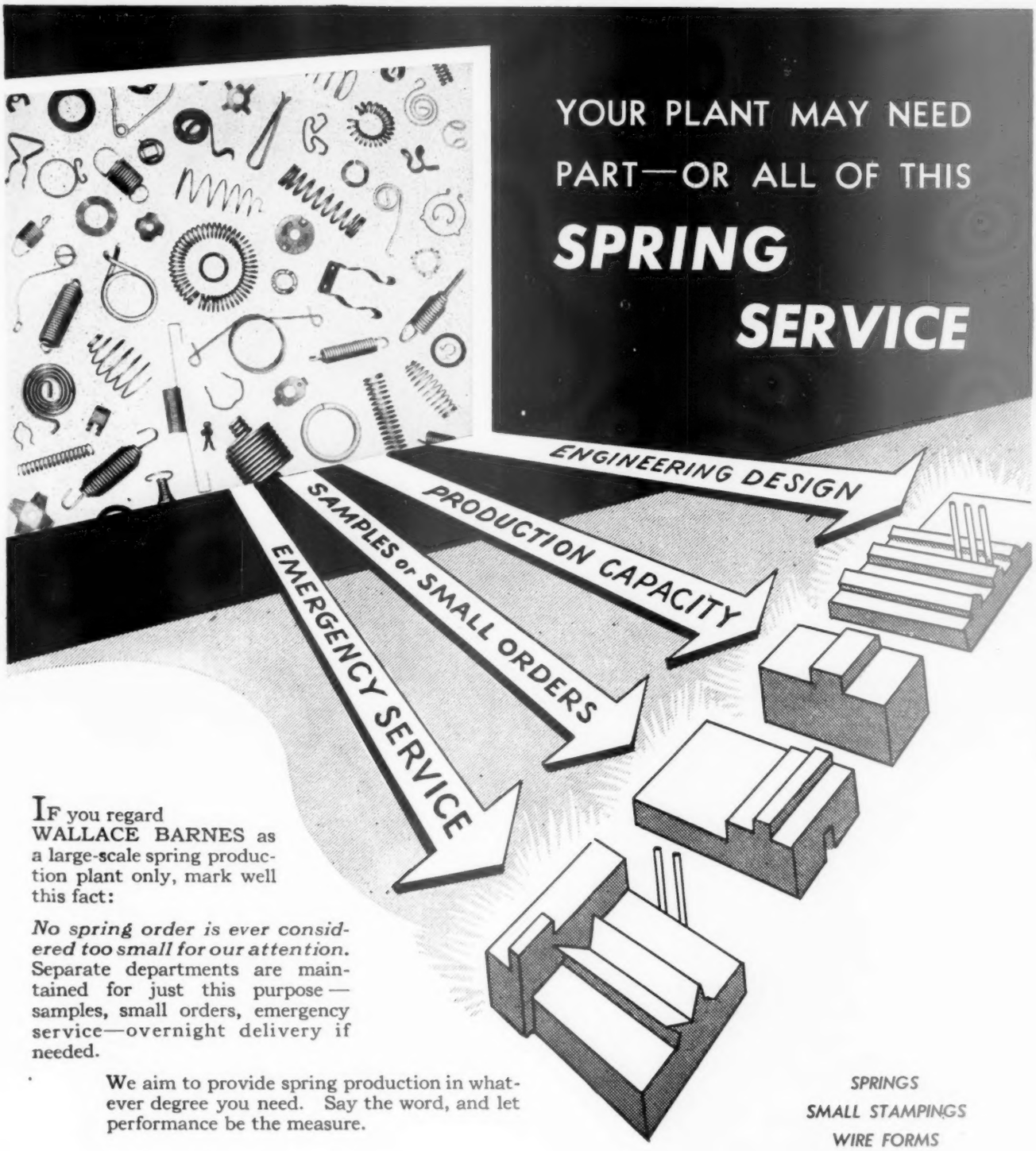
FREE! See how Truarc can improve your products—cut production and maintenance costs. Write today for Truarc booklet showing applications and design sketches. Specify Booklet 30C.

NOW YOUR MACHINES CAN HAVE THE DESIGN ECONOMY of retaining rings regardless of load, stress or accuracy involved. Waldes TRUARC high precision retaining rings do the job of nuts, shoulders, collars, pins and snap rings. Yet they allow lighter, more compact units—make assembly and disassembly quicker, easier. TRUARC retaining rings give *better, more dependable retention* because their mathematical precision means perfect circularity—insures an unfailing grip. There's a Truarc ring for every mechanical purpose.

U.S. PAT. RE. 18,144



WALDES TRUARC RETAINING RINGS
TRADE MARK
WALDES KOHINOOR INC., LONG ISLAND CITY 1, N. Y.
CANADIAN REPRESENTATIVE: FRENCO PROGRESS AND ENGINEERING CORPORATION, LTD., 72-74 STAFFORD STREET, TORONTO



IF you regard WALLACE BARNES as a large-scale spring production plant only, mark well this fact:

No spring order is ever considered too small for our attention. Separate departments are maintained for just this purpose — samples, small orders, emergency service—overnight delivery if needed.

We aim to provide spring production in whatever degree you need. Say the word, and let performance be the measure.

SPRINGS
SMALL STAMPINGS
WIRE FORMS

SPRING STEEL

Barnes-made springs
Engineered Pep and Power

WALLACE BARNES COMPANY
Division of Associated Spring Corporation
Bristol
Connecticut

AO Respirators

FIT THE FACE

COMFORTABLY

FIT THE NEED

EXACTLY

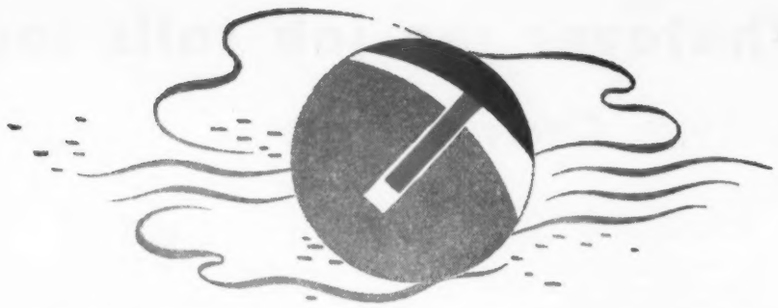
The AO R-1000 Respirator establishes new standards of safety and comfort for workers requiring protection from dusts, gases and vapors. It is really seven respirators in one, as it may be fitted with any of seven interchangeable cartridges designed for protection against specific hazards.

The AO R-9100 Respirator—for protection against nuisance and pneumoconiosis-producing dusts—weighs less than 2 ounces—fits snugly and comfortably on all types of faces—both men's and women's. (AO R-9100T for protection against *toxic* dusts.)

Call or write your nearest AO Safety Representative for complete details.

American Optical COMPANY *Safety Division*

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL CITIES



WHAT— NO "FEATURES"?

. . in Gast Vacuum Pumps (to 28 in.), Compressors (to 30 lb.), and Air Motors (to 1 h.p.)

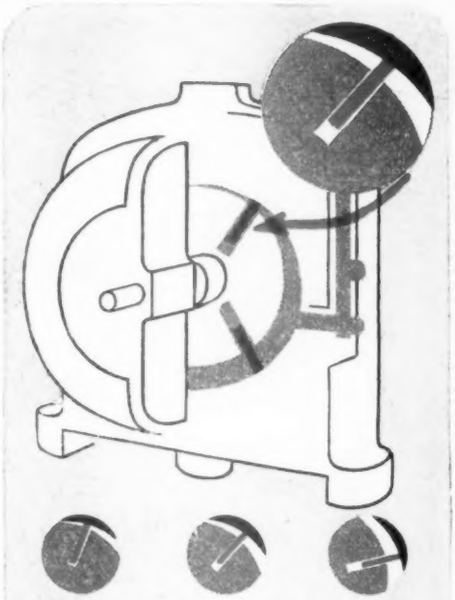
The Gast is so remarkably free of "features" and complexities that users say truly, "It practically works without works."

Could anything be less prone to trouble, or more likely to work, than. A slotted rotor, with one-piece vanes which slide outward against the cylinder walls, and seat themselves, and take up their own inconsiderable wear, because centrifugal force won't let them do anything else?

That's all there is to a Gast. That's why Gasts work so dependably, why they deliver MORE per pound of weight and MORE per horsepower, and why they can be so well built, yet so reasonably priced.

The logic of Gast simplicity appeals strongly to men who manufacture machines. They see that simplicity in terms of sales, and in terms of carefree operation in users' hands. More and more of them are sending for the Gast catalog, and arranging for a Gast Engineering Test. Very possibly it will pay you to do the same.

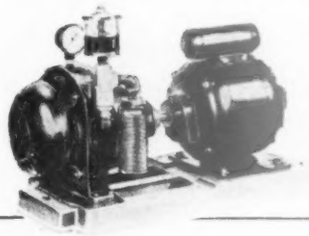
GAST MFG. CORP.
150 Hinkley Street
Benton Harbor, Michigan



Vanes: Self-seating . . self-adjusting . . springless. Centrifugal force holds them against cylinder wall. They "work without works". . . Continuous, non-pulsating flow. . . More air per pound of weight, more air per horsepower. . . Forced-air cooling: long life, oil economy, no hot-oil odor . . . Automatic shaft seal: no packing, no leaking, no adjusting.

ENGINEERING TEST OFFER . . So You Can SEE IF YOU'RE MISSING SOMETHING!

Simply write our Engineering Department and explain the operation you think air might handle, or describe the job air is already doing for you. Our Engineering Department will study your problem, select or design a Gast unit to do the specified work at less cost or at greater efficiency or both. Then, without cost or obligation, the recommended unit will be shipped to you for your performance tests.

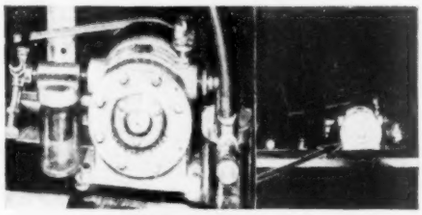


GET THIS IDEA-CATALOG

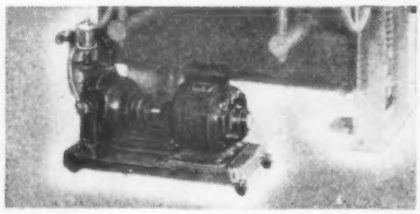
Is not only tells how Gasts are built and all about them, but suggests uses that may not have occurred to you. Write for it; no charge or obligation!

GAST ROTARY

VACUUM PUMPS · AIR COMPRESSORS · AIR MOTORS



Gast Vacuum Pumps as Standard equipment on a Camera



A Gast Compressor in Combined Vacuum and Pressure Duty on a Printing Press Feeder

A Gast Air Motor as a Portable Mixer

Whatever the job calls for

. . . it's in the Crane line

Take this filter installation for example . . . or any piping job. What a difference it makes when you can specify all the piping materials from one line. And when just one order gets you all the valves and fittings, pipe, accessories, and fabricated piping.

From start to finish, any piping job is easier when Crane is your partner. The proper equipment for every service is assured. Crane gives you the world's greatest selection of brass, iron, and steel piping materials.

Undivided responsibility for materials helps you get the best installations. Uniform Crane quality . . . the standard of quality for more than 90 years . . . in every part means uniform dependability throughout piping systems.

This 3-way advantage of standardizing on the Crane line is the sure way to reduced piping costs. Can you afford to overlook it?

CRANE CO., *General Offices:* 836 South Michigan Avenue, Chicago 5, Ill. *Branches and Wholesalers Serving All Industrial Areas.*

ONE
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY

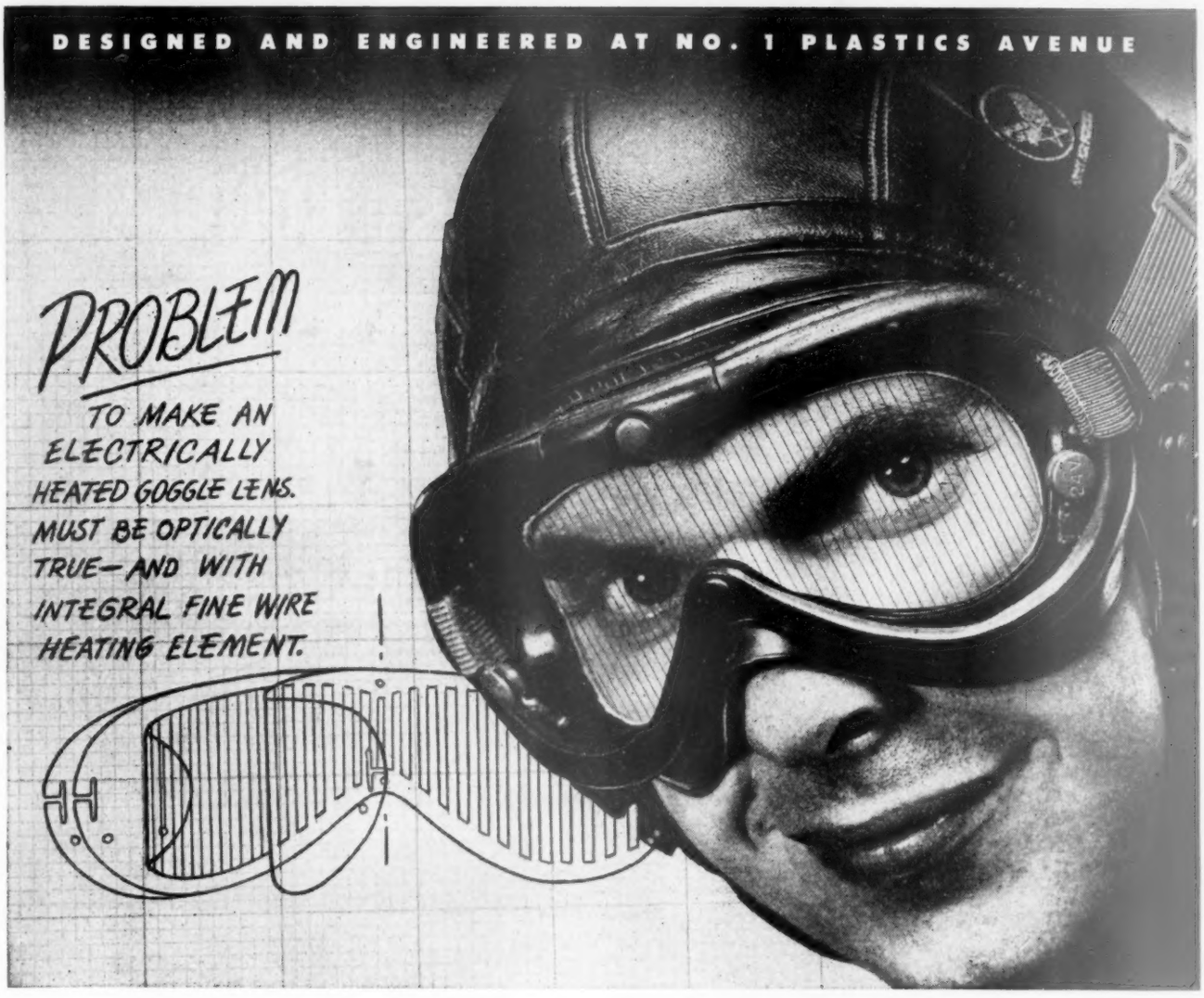
(*Right*) **UNCOMMON QUALITY** *in commonly used valves—Crane Standard Iron Body Wedge Gate Valves. Improved body design reduces weight yet increases strength. Straight-through ports assure streamlined flow. Every detail developed to give dependable, durable service. For steam pressures up to 125 pounds; 200 pounds cold. Patterns for every need. See Crane Catalog, page 101.*

EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
HEATING • PUMPS

CRANE

FOR EVERY PIPING SYSTEM


DESIGNED AND ENGINEERED AT NO. 1 PLASTICS AVENUE
PROBLEM
TO MAKE AN ELECTRICALLY HEATED GOGGLE LENS. MUST BE OPTICALLY TRUE—AND WITH INTEGRAL FINE WIRE HEATING ELEMENT.

PLASTICS MAKE A MAGIC LENS

Our airmen needed eye protection for high altitude flying—a new heated lens that wouldn't frost, even at 50 below zero.

The problem of heating a goggle lens was brought to the Appliance and Merchandise Department of General Electric. G-E engineers at 1 Plastics Avenue showed how to laminate transparent, heat-conducting plastics to contain an electrical heating element—a vein of fine wire.

G. E. developed a novel, precise process to laminate a perfectly flat, optically true lens with its fine wire heating element intact. Dust and fingerprint flaws were avoided by air-conditioning and by clothing operators in lintless uniforms and gloves. More than half a million heated plastics goggle lenses were made for our flyers by General Electric.

Many other wartime jobs have added to plastics "know-how" at G. E.—the world's largest manufacturer of finished plastics products. Bring any plastics problem to the General Electric Co., 1 Plastics Avenue, Pittsfield, Mass. *We shall be glad to send you upon request a copy of the new illustrated booklet, "What Are Plastics?"*

EVERYTHING IN *Plastics*

G-E Complete Service—Everything in Plastics

Backed by 52 years of experience. We've been designing and manufacturing plastics products ever since 1894. G-E Research works continually to develop new materials, new processes, new applications.

No. 1 Plastics Avenue—complete plastics service—engineering, design and mold-making. Our own industrial designers and engineers, working together, create plastics parts that are both scientifically sound and good-looking. Our own toolrooms are manned by skilled craftsmen—average precision mold experience, 12 years.

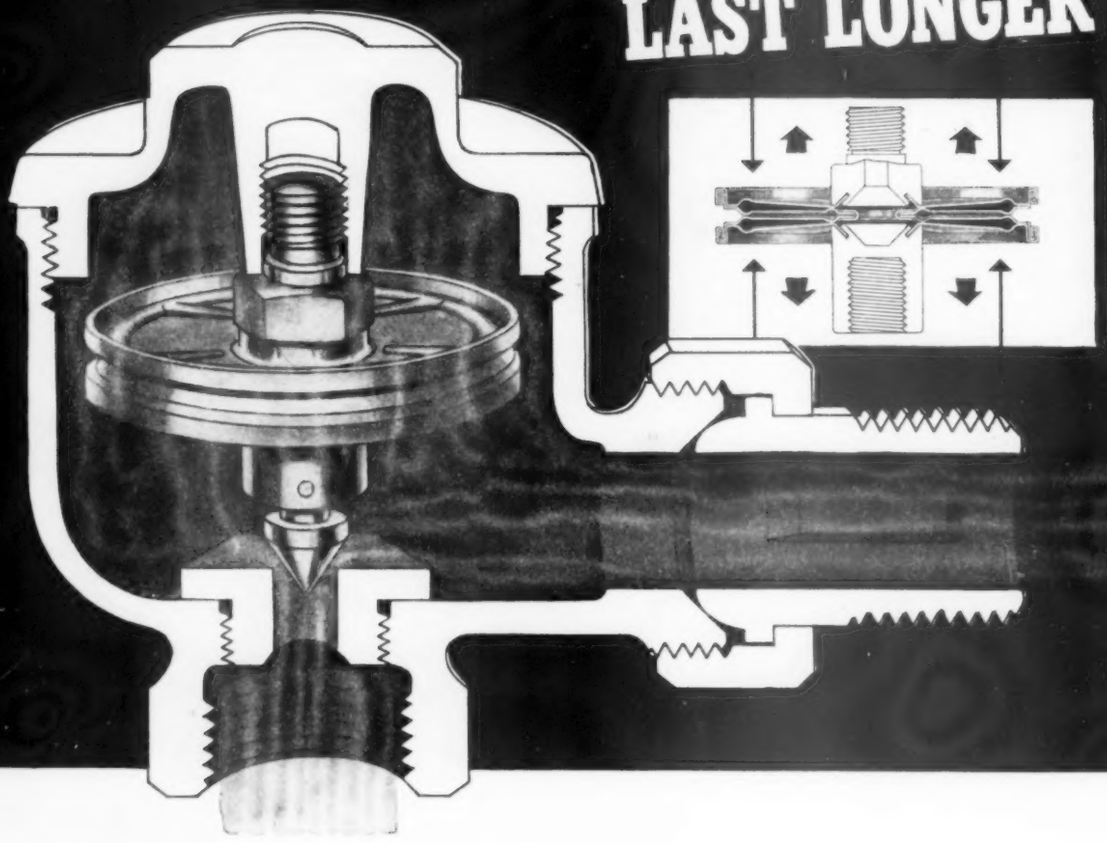
All types of plastics. Facilities for compression, injection, transfer and cold molding . . . for both high and low pressure laminating . . . for fabricating. And G-E Quality Control—a byword in industry—means as many as 160 inspections and analyses for a single plastic part.

GENERAL ELECTRIC

CD46-A12

General Electric plastics factories are located in Fort Wayne, Ind., Meriden, Conn., Scranton, Pa., Taunton, West Lynn, and Pittsfield, Mass.

How to make the "Lung" of a Thermostatic Trap LAST LONGER



Some years ago a company whose name you know as well as your grandmother's had to create and construct a diaphragm for their steam heating trap.

Though this may seem a reasonably simple assignment, material for such a diaphragm requires many coordinated properties. It must be elastic and non-corroding under widely varying temperatures and pressures, strong, solderable, and free from surface imperfections which might lead to early failure.

Riverside *Phosphor Bronze* did the trick . . . and it has stayed on this job for years because it has all the needed properties. Its uniform structure and thickness make standardization easier, and *Phosphor Bronze* by Riverside helps to keep customers friendly and *warm*. Look into *customized* Riverside *Phosphor Bronze*, *Nickel Silver* and *Beryllium Copper* for *your* applications.

INSIDE RIVERSIDE—*Every order we receive extends our lead time (it's long now) and increases our headaches. Rather than take an aspirin, however, we've rolled up our sleeves to get your work out. We're going to keep pushing until we've finished the job. That's a promise.*

RIVERSIDE

THE
RIVERSIDE METAL COMPANY
NEW YORK CHICAGO RIVERSIDE • NEW JERSEY HARTFORD CLEVELAND

HARD JOBS DONE EASY ... IN 3 QUICK STEPS

1

In the hands of a worker (inexperienced workers can do the job after very brief instruction)....

2 Any portable air or electric driven machine....

3

Fitted with a Delta Rotary File (all shapes and sizes to choose from) will cut many filing jobs from hours to minutes.

Revolutionary! There are a thousand uses for Delta Rotary Files. They save time, lower costs, and speed up work. Try them on a job today ... begin profiting by the advantages of

DELTA ROTARY FILES
Hand Cut or Ground

Yes, faster filing . . . removing *more* metal per stroke . . . is one way to tell it's a Delta File.

Every stroke counts, because each tough, tiny tooth on a Delta File is precision cut . . . shaped like a planer edge . . . to carve away its full share of the metal.

Delta Files last longer, too. Scientific tests show that long after most other files are worn useless, the Delta File keeps removing metal.

There's a Delta File for any job. Get Delta — for longer life, for faster work, for better filing.

DELTA FILE WORKS, 4837 JAMES STREET, PHILADELPHIA 37, PA.

DELTA FILES

DELTA

WHEN AN ADHESIVE MUST *Resist Dew!*

RELY on National...with its wide knowledge of unusual adhesive uses... to provide protection against any form of moisture.

Do you need a moisture resistant adhesive . . . to protect quick-freeze packages against dew-formation . . . to protect bathroom packages against shower condensate . . . to protect potato bags against excessive moisture caused by freight car humidity . . . to prevent mildew during prolonged damp, dark storage?

Or is your problem more complex? Do you need a moisture resistant adhesive film . . . that supplies *breather action* to permit asphalt to be packaged and sealed while still steaming hot . . . that supplies a *moisture vapor barrier* to retain the freshness of various types of foods . . . that supplies *water barrier action* to prevent rain from causing ripples or cockles in heavy cardboard advertising displays?

Remember, moisture resistance is only one of many factors that control a successful adhesive formula. Of course, shop use must also be studied carefully. Shipping methods must be known. Consumer preferences must be analyzed. They have a direct bearing on final—and repeat sales!

You can rely on National . . . with its knowledge of every type of adhesive formula and use . . . to give careful attention to every factor of your adhesive problem. Your inquiry is invited — NOW!

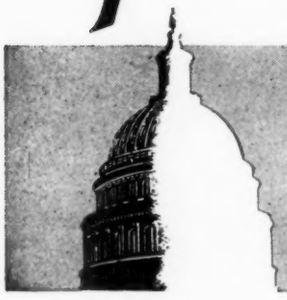
Dunellen Plant

• Offices: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto. In England: National Adhesives, Ltd., Slough.

National ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

Purchasing Previews



A Washington Report..... for Purchasing Agents

June 1, 1946

SURPLUS PROPERTY DISPOSAL TRENDS . . .

Congressional action giving veterans priority on hard-to-get items of war surplus further complicates War Assets Administration job of disposal.

War Assets Administration is still stressing decentralization of both sales and policy as regards surplus disposal. Actual sales volume of surpluses is increasing, and WAA has set specific goals which call for still further increases.

The experience has been that on standard items and materials, sales are consummated quickly——but that sales of non-standard items have moved slowly.

DELIVERY UNCERTAINTIES DESPITE HIGH EMPLOYMENT . . .

Repeated statements during recent months that little unemployment was developing made PA's wonder what was happening to the end product. With a large labor force at work, they must be making something. The phrase "filling the pipeline" has become pretty thin.

Facts are that for a time inventories were being built up considerably in anticipation of a strong inflationary trend. When this trend showed itself to be a controlled groundswell upward, inventory hoarding became less prevalent.

At this point, the series of strikes cut heavily into production, and created a disjointed supply outlook. Currently the story seems to be that shortage of pig iron and steel traceable to the steel strike is responsible for shortages of many items in construction. This situation is multiplied in other industries where shortages occur in electrical components——again traceable to strikes.

Whether for reasons of labor or material difficulty, the problem of obtaining assured deliveries is likely to remain with PA's for some time to come. This, notwithstanding the advent of a new high level of production.

GOVERNMENT PROCUREMENT RUNNING INTO DIFFICULTY . . .

Government PA's report that getting firm price and delivery guarantees is more difficult at this time than at any period since the end of the war.

In some cases, bids received fill only 50% of the requirements——and sellers generally are reluctant to quote firm prices on future deliveries.

Majority of prices, where there is a price ceiling, are flush up against the ceiling——but there are isolated instances where the price may be below OPA. In such instances, the considerations are usually that the seller is in a particularly favorable position in manufacturing the item and is anxious for a volume order.

CONSTRUCTION PRICE CURBS SOUGHT . . .

Government agencies concerned with housing are now seeking to level off the prices of construction materials. There have been a number of price adjustments in building material prices; in some cases a series of successive price boosts have been granted for one class of materials.

National Housing Agency and price control officials feel that the numerous adjustments which have already been made should be sufficient. At this stage,it is generally felt that the major need is for a restoration of some stability in prices——so that builders can make reasonably accurate cost estimates.

Illustrating the upward trend in prices in recent months, price increases granted by OPA include a 12% boost for warm air furnaces; $4.60 increase per thousand board foot for Western Pine lumber; 20% on cast iron radiation; 14% increase on low pressure steel boilers; 10% increase on valves and fittings; 8% increase on Appalachian hardwood lumber; 11.4% increase on Douglas Fir open window sash; 28% increase on Douglas Fir doors; and 20% increase on plywood.

SELECTIVE FOREIGN TRADE CONTROLS FAVORED . . .

Where raw material supplies available on the world markets are considerably short of demand, U. S. policy favors a continuation of purchase, import, export and transportation controls.

Best example of this policy is the recent action, concurred in by the State Department, Department of Agriculture, Civilian Production Administration, Office of Price Administration and the Office of War Mobilization and Reconversion, calling for continuation and strengthening of the Combined Hides, Skins and Leather Committee. This committee controls the international allocation and price of practically all types of hides.

There was some speculation that the United States traditional emphasis on free markets might lead this country to kick over the agreements on control over world markets in hides. With world demand for leather exceeding supplies by a wide margin, it was feared that a withdrawal by this country from the supply and marketing pool would lead to much higher prices.

The United States position has been advanced as not only favoring continuation of the committee, but also its enlargement by bringing in all major importing and exporting countries, and subjecting further types of leathers to controls.

This policy can be considered generally applicable where strategic materials are in short supply, although it is likely that each material will be subject to variations in treatment.

CONTRACT TERMINATIONS TERMINATING . . .

Contract termination activity has shifted from the settlement of a large number of small contracts to the settlement of a smaller number of much larger contracts.

Director of Contract Settlement H. Chapman Rose reports that the procedures for settlement of contracts have been adequate in the past, and are sufficient for the future.

The outlook is for continued progress, and the functions of the Office of Contract Settlement are slated to be transferred directly to the Office of War Mobilization and Reconversion.

Major activity of interest to a large number of contractors from this point on is the operation of the Appeal Board, which is just beginning to grind out its work on the few cases which have come before it to date. While it is not expected that many cases will actually come before an Appeal Board, the decisions will establish patterns for settlements where issues of major differences develop.

FLUORESCENT LAMP COMPANY SAVES $15,000

"To change our old type containers to those assembled by wire stitching, one Acme Silverstitcher was custom-built and installed. Efficiency resulted, so our entire sealing system was converted and a saving of $15,000 annually realized in material alone."

USE THE CLOSURE COMBINATION THAT

SLASHES SEALING COSTS

SilverStitch® BOX STITCHING WIRE

SilverStitchers® BOX STITCHING MACHINES

- Always uniform in width and gauge
- Makes stronger, surer closures than other methods . . . unaffected by weather
- One-piece, continuous length, 5 and 10 pound coils . . . cuts threading time
- Galvanized to resist rust, corrosion
- Operate easily, smoothly, quietly
- Heavy duty construction . . . low power consumption . . . for long thrifty service
- Few moving parts . . . vital ones reversible . . . for lower maintenance costs
- Adjustable, single pedal control

Sealing Shipping Containers by Stitching is Faster, Stronger and More Economical

ACME STEEL COMPANY

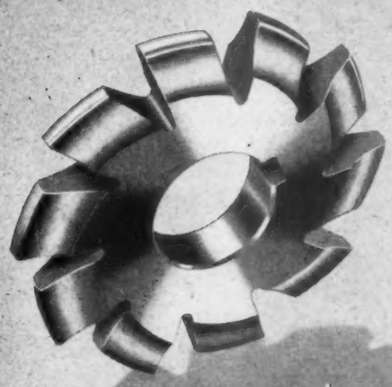
NEW YORK 17 ATLANTA CHICAGO 8 LOS ANGELES 11

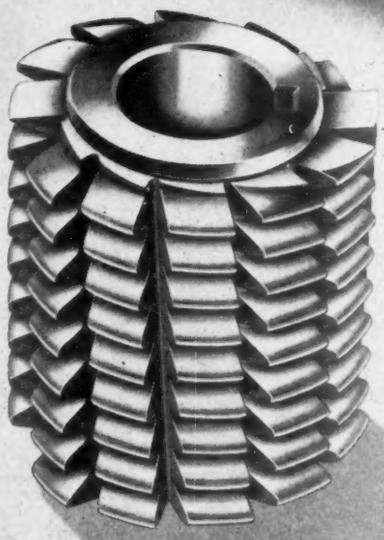
Artist: Arthur Williams

VERMONT— where 310,000 people buy $200,000,000 in goods a year — much of it packed in paperboard. This is only one of 48 rich state markets for properly packaged products. Consult with us on your present package, for maximum customer appeal, protection and economy.

CONTAINER CORPORATION OF AMERICA
CHICAGO AND 23 OTHER CITIES
SAVE WASTE PAPER

FACTS about HOBS and GEAR CUTTERS





Call Your **DISTRIBUTOR!**

Leading distributors in every section of the country have complete stocks of National Cutting Tools. Every National distributor has a factory trained man to serve you. Call your National distributor for cutting tools or any staple industrial product.

Hobs are used for cutting various types of gears, such as spur, spiral, worm, and involute gears, and spline shafts, and for a number of similar applications, where large quantities are to be produced. Single type Gear Cutters are used for small quantity short run jobs where the expense of hobs are not warranted.

NATIONAL makes a complete line of gear cutters and hobs, for every application. All are of the same high standard that has made NATIONAL tools the National choice.

NATIONAL TWIST DRILL & TOOL © ROCHESTER, MICH. U.S.A.

TWIST DRILLS
REAMERS, HOBS
MILLING CUTTERS
COUNTERBORES
SPECIAL TOOLS
END MILLS

NATIONAL
TWIST DRILL AND TOOL COMPANY
ROCHESTER, MICH., U.S.A.

Tap and Die Division — Winter Bros. Co.

Factory Branches • New York • Chicago • Detroit • Cleveland • San Francisco • Distributors in Principal Cities

where ENGINEERING *meets* EXPERIENCE *halfway*

● The effects of dynamic and eccentric loading of springs; rubbing contact; buckling; small but unavoidable variations in wire and spring diameters—these and many other factors are often sufficient to upset all theoretical calculations in spring design. Satisfactory performance and long life, therefore, depend to a large extent on a rare combination of spring engineering and ripe experience in diagnosing and prescribing the remedies for spring troubles.

Successful spring designing consists of producing the simplest and least expensive springs which will do the work satisfactorily. That's why the highly specialized engineering and practical experience of the "Cleveland" organization is doubly valuable to manufacturers when designing new equipment or instruments. This service is yours for the asking, without cost or obligation.

Cleveland SPRINGS

CLEVELAND WIRE SPRING CO.

2012 West 25th Street, Cleveland 13, Ohio

Subsidiary: Reynolds Spring Company, Jackson, Mich.

Check with "Pittsburgh" for Activated Carbon

ACTIVATED carbon, most versatile of adsorbents, has demonstrated its wide usefulness in solving problems of deodorization, decolorization, fractionation, gas purification, solvent recovery, catalysis, air conditioning and drug and organic chemical isolation, in gas or liquid phase.

For most applications standard or "ready made" grades of Activated Carbon manufactured by Pittsburgh Coke & Chemical Company are entirely satisfactory. Occasionally, however, special conditions may require an adsorbent made to your exact specifications. For such applications *Pittsburgh* Activated Carbon can be "tailored" to fit the need.

Wide experience in the field of adsorption qualifies our technical staff to render intelligent cooperation. Quantity manufacturing facilities, additionally, make *Pittsburgh* a dependable source of supply.

Your inquiries are invited.

Other "Pittsburgh" Coke and Chemical Products

Activated Carbon • Benzol-Motor, Nitration, Pure • Coke Oven Gas • Creosote • Cresol, Meta Para • Cresol, Ortho • Naphtha, Heavy Solvent • Naphthalene • Oleum (Fuming Sulphuric Acid) • Phenol • Picoline-Alpha, Beta and Gamma • Pitch-Briquetting, Roofing, Waterproofing • Pyridine-Medicinal and Industrial • Sodium Cyanide • Sodium Thiocyanate • Sulphate of Ammonia • Sulphuric Acid—60° and 66° • Tar Acid Oils • Tar Bases, Crude • Tar-Crude and Road-Toluol-Nitration and Commercial Grades • Xylol—10°, 5° and 3°.

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Neville Coke • Emerald Coal • Pig Iron • Green Sag Cements • Concrete Pipe • Sterling Old Range Iron Ore • Limestone Products

INQUIRIES INVITED

Pittsburgh Coke & Chemical Company

Grant Building **Pittsburgh, Pennsylvania**

•• in WRENCHES

•• The Name is Billings

B

CRAFTSMEN SINCE 1869

THE BILLINGS & SPENCER CO. HARTFORD (1) CONN. U.S.A.

STEEL USERS...
HERE IS YOUR

Symbol of Service!

UNITED STATES STEEL SUPPLY COMPANY
USS
STEELS
SERVICE

OUR nine conveniently located warehouses try at all times to carry adequate, well-balanced stocks to meet your needs. Our engineers are always glad to help you solve any problems you may have which involve steel selection, application and fabrication.

When you need steel—Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Alloy Steel, Stainless Steel, Tools, Machinery, etc.—phone, wire or write our nearest warehouse for courteous attention and prompt action.

LISTEN to the United States Steel radio show every Sunday evening. Consult your local newspaper for time and station.

UNITED STATES STEEL SUPPLY COMPANY

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BALTIMORE (3)	Bush & Wicomico Sts., GIlmor 3100 P. O. Box 2036
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42—STAdium 9400
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TWIN CITY	2545 University Ave., NEstor 2821 St. Paul (4)

UNITED STATES STEEL

RELIABILITY

The SUPERSTRONG box or crate you buy today represents the experience and expert craftsmanship gained in nearly a century of better box making.

Many large users of shipping containers are planning with us for their long range requirements. Our engineering department will be glad to tell you how SUPERSTRONGS—"Bound with Steel"—can solve the shipping problems of your future postwar products.

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS REG. U.S. PAT. OFF.

RATHBORNE, HAIR AND RIDGWAY COMPANY

1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

FINE FURNITURE deserves these FAULTLESS FASTENINGS

Fine cabinet work calls for this modern wood screw that adds to your pride in your product. Whatever the species and texture of wood, Twin-Fast Screws assure more accurate, neater, tighter fastenings. Twin-Fast's exclusive design eliminates misalignment, displacement, splitting and faulty fit that might mar finished parts. And Twin-Fast's greater holding power offers consumers an extra value that proves itself in service.

These are just a few of the reasons why Twin-Fast Screws go into more and more of today's fine furniture—and tomorrow's. Why not test Twin-Fast on your own furniture products? *Send for samples and illustrated literature, today.*

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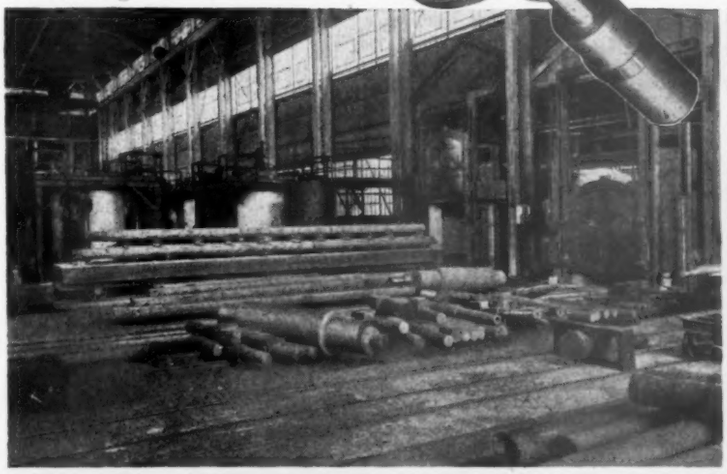

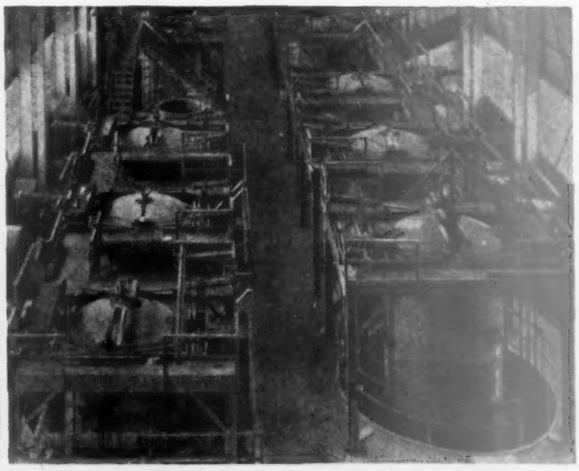

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PURCHASING

The National Magazine of Industrial Purchasing

JUNE, 1946

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ALL OTHER THINGS BEING EQUAL...

ONE of the first lessons that every purchasing agent learns is that "all other things" in any situation are rarely equal. His decision would be relatively simple if this were not the case. He is constantly importuned —"all other things being equal"—to accept the lowest bid, to buy on reciprocity, to take the newer product. If he listens to this argument without putting the proposal to the test of a broader analysis in this constantly changing world, he is likely to wake up to find the lower price offset by higher cost of operation, the good will bought at the cost of service deficiencies, the apparent technical advantage already overbalanced by the force of its own impact on the field.

Much of the economic maneuvering that has brought turmoil into the American industrial scene today is based on the false assumption by various pressure groups that they can effect changes respecting their own interest without inducing changes in every factor of the situation.

It is assumed that prices can be fixed, so that broad increases of income will mean higher living standards, whereas each extra cost must be put into the price and the dollar shrinks.

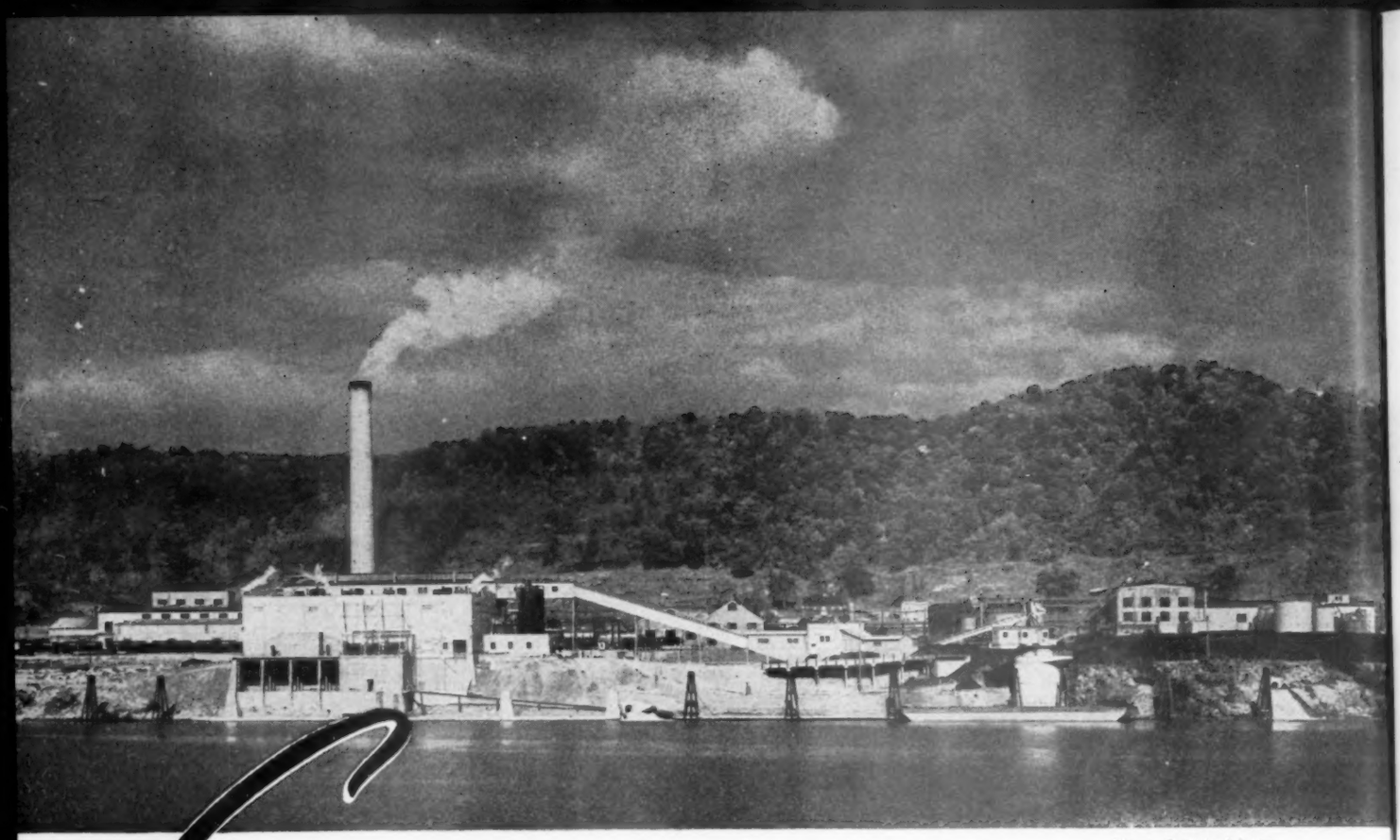
It is assumed that total profits are a fixed amount, subject to reapportionment, whereas reduced incentive discourages the enterprise that makes jobs possible in the first place.

It is assumed that there is an unalterable minimum demand for each specific material or fuel or product, whereas competitive items in every case are waiting for the tiniest economic advantage that will enable them to move in and appropriate the field.

It is assumed that the national wealth is indestructible, whereas our resources have value only as they are put into production and our national wealth has already been impoverished by millions of wasted man-hours that can never be recovered.

Conditions change, but fundamental economic law remains. All other things being equal, a nation or a group or an individual will prosper to the extent that they honestly seek to give value. And that is as true of human values as of the tangible materials of industry. "Increase production," Bernard Baruch counseled the Legislature. "This is the Law and the Prophets. Without it, the rest is meaningless. So I say it again—Increase production."

Stuart F. Heinritz



Photo—Gottscho-Schleisner

Columbia buys Natrium, W. Va. Plant

The chlorine-caustic soda plant at Natrium, W. Va., has just been added to Columbia's facilities.

Built and operated by Columbia for the Defense Plant Corporation, the Natrium Plant bids to be a major factor in serving peacetime industry just as it was in producing gigantic quantities of chlorine and caustic soda for critical war industries.

This important plant, added to the facilities at Barberton, Ohio, and Corpus Christi*, Texas, is a step in Columbia's expansion program planned to meet the demand of industry for these essential chemicals.

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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

What is the practical outlook for atomic fission as a source of industrial power? What are the applications and advantages of the new silicones? Can we expect to produce enough molybdenum to bring this metal into broader uses? What is the future of radar, television, gas turbines? A well informed scientist views these developments in realistic fashion as he discusses **Engineering for Tomorrow,** on page 87. Already these new discoveries have emerged from the laboratory and have made their impact felt on products and processes, and there is more startling progress in sight.

There has been progress, too, in the **Science of Purchasing,** as Norman Aeby points out in this month's guest editorial. The buyer who clings to obsolete policies and methods of buying fails in his responsibility to his company and to his profession. Turn to page 85 for this stimulating message.

There's a wealth of commercial information available to you from governmental research, and much of it can be had for the cost of a 3-cent stamp. The article on **Government Service for the Asking,** page 110, tells of the new check list of current publications issued by the Department of Commerce, and how you can get it.

The real cost of materials, delivered at the machine, includes demurrage, receipt, and moving in and out of stores. In like manner, about 30% of manufacturing costs are incurred in moving materials. To do an efficient job, the greatest potential opportunity for savings may lie in this factor. A. H. Dobler gives some excellent suggestions on cutting costs through **Better Materials Handling** in his article of that title, appearing on page 92.

All products pass through a well defined life cycle, starting with the development stage and ending with the period when other products supersede them. This has a vital significance for the purchasing agent in determining a proper buying policy. Ned Cady outlines a new approach to value in his discussion of **Product Maturity.** Turn to page 96.

The **Educational Buyers Association** held its Silver Anniversary Convention in Chicago last month. Their problems are those of every procurement man—plus. American colleges are taking on an additional half million students this fall, and a half million more are knocking at the gates. You will be interested in reading how they are meeting this problem. The story of the convention appears on page 118.

In one of the outstanding convention papers, Les Robbins puts an **X-Ray on the Purchasing Department.** Measurement of buying efficiency involves consideration of many intangibles, and cannot be done on a simple dollars-and-cents basis. In this new approach to a old problem, the difficulties are not minimized or evaded but are faced squarely. There's value in making the analysis, even if you don't come out with a complete formula. This article, on page 124, will give every purchasing agent something to think about.

Alkyd resins have put some important new properties into **Paint Products,** as Dr. J. S. Long reports in the article on page 127. They are still somewhat scarce, and they cost a little more than conventional prewar paint vehicles, but the results in durability, resistance to wear, and color accuracy are noteworthy.

The law of **Trade Marks** presents some complications with which you ought to be familiar. Leo Parker, on page 111, has compiled the most recent court interpretations on the subject, and explains them in layman's language for the purchasing agent. Add this article to your file of information on business law.

Don't overlook these monthly departmental features compiled especially for purchasing men—the **Washington Letter** on page 65, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of **Know-How Information,** that is yours for the asking, appearing on page 10; and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer (page 138), providing a quick and convenient means of keeping up to date on recent developments.

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RYERSON STEEL

Mr. Aeby's career in purchasing started in 1903, with the Jeffrey Manufacturing Company of Columbus, Ohio. He was one of the founders of the Purchasing Agents Association in that city, and was a member of the original Board of Directors of the National Association of Purchasing Agents in 1915, subsequently becoming First Vice President of the national organization at the time of the second annual N.A.P.A. convention at Pittsburgh in 1917.

During these early years, he took an active part in organizing local associations in several of the cities of Ohio and Indiana. In the course of his business advancement, he has successively been an active member of the Columbus, Detroit, Chicago and New York Associations, and recently completed a notably successful term as President of the New York group.

Mr. Aeby has seen at first hand the development of the purchasing function from its rudimentary beginnings to its present status in management science, and he has contributed much to that development in his personal experience. When he discusses "A New Concept of the Purchasing Job" he speaks with authority and his comment has unusual significance. As Director of Purchases for one of the nation's outstanding industrial organizations, he is currently applying these modern principles in purchasing for a $50,000,000 expansion program.

A NEW CONCEPT of the PURCHASING JOB

By NORMAN O. AEBY

Director of Purchases, Johns-Manville Corporation, New York

INFLATION and rising prices are today commanding the attention of every phase of Management. The emphasis, right now, is on cutting manufacturing costs. In some industries, purchased materials represent from 40 to 60% of manufacturing cost. This calls for a new concept of the purchasing job and its responsibility. It calls for more aggressive purchase research, greater initiative and resourcefulness. For we must do our part to offset these constantly rising costs, and Management will increasingly put the microscope on purchasing methods and results.

Today we face swiftly changing conditions and just about every conceivable difficulty in procurement. Some of our problems were undreamed of prior to V-J Day. Excessive labor demands, continued critical shortages of materials, black markets, and higher operating costs have forced a change in our thinking, planning, and action. Contrary to our hopeful expectations, and contrary to the layman's opinion, procurement now is more difficult in many respects than it was during the war. There has been no peace declared for the Purchasing Agent.

We are of course aware that no sellers' market will continue indefinitely. The same is true of buyers' markets, where cut-throat competition destroys market stability. Intelligent and far-sighted Management wants neither. That goes for purchasing men, too!

But we cannot afford to wait for the turn of the tide. We must act promptly to combat the rising tide of mounting costs. Many industries are already suffering acutely from the squeeze between their higher purchase and production costs and the controlled ceiling prices of the goods they would like to sell. Witness the growing number of cases in which vendors are eliminating unprofitable items from their lines, despite the fact that there is a continued demand and need for these very items.

A Job for Today

We cannot accomplish anything useful by clinging to outmoded methods of procurement. If we are to make a proper contribution to the solution of current problems, and if we are to earn the continued respect and confidence of Management, the purchasing department must originate purchase cost reductions, accelerate its search for lower cost substitutes, especially where prices are getting out of hand, and develop entirely new sources of supply and improved methods in the use of materials. We must carefully scrutinize every one of our major items of supply. We must frankly ask ourselves the fundamental question —shall we make or buy?

Right here is where a sound and healthy relationship between buyers and sales representatives will pay big dividends. For the answer to our problem does not lie in attempting to beat down the price; it lies in cooperation, mutual confidence, and mutual helpfulness. An eager array of suppliers, with their engineers or technicians, are now or soon will be ready to assist purchasing men with their problems in a wide variety of fields. The Purchasing Agent has no passive role to play in this picture. He must put the psychology of salesmanship to work as a tool of purchasing, and dedicate himself to a policy of increased cooperation with the suppliers. Inspire the vendor to do his best for you. The combined know-how of both sides—the buyer and the seller—will frequently result in finding a practical way of reaching the common goal—reduced costs to the buyer without necessarily sacrificing a reasonable profit to the seller. A mutual study of cost elements, approved changes to acceptable substitutes, or changes in design, production methods, or ordering policies, may frequently solve the problem with profit to both sides.

Entirely new sources of supply may be the answer in some cases, but this does not imply that only the new sources can be helpful. Old and reliable suppliers, with whom a proper relationship has been established, are also willing and able to meet the new requirements, provided we make our wants known to them. It is up to the purchasing department, with its basic knowledge of the problem, to encourage such cooperative effort. From that point on, it is the combination of technical talent on both sides of the negotiation, that will provide the answer.

I have seen many successful results of this policy. To cite just a

few examples out of many, there is a large potential field for better practice and substantial cost savings in such items as packaging materials. A radical change-over from cartons to paper bags in packaging one of our products resulted in a notable cost production and opened a large, new, and profitable outlet for the bag manufacturer. The development of a new plastic formula, tailor-made for a specific job and doing a better job, showed an actual cost redutcion as compared with the standard plastic heretofore used. Alternates for oxides, metal containers, burlap and cotton bags, and many other items, have been developed through this collaboration between buyer and supplier.

There is a fruitful opportunity, too, in greater cooperation within our own companies. In order to do a better job of procurement, we must not hesitate to constantly use the talent and services of those in our own company's divisions of industrial engineering, research and production. They are available, even though it may be the purchasing department that initiates a cost reduction project. And it is frequently through their cooperation that these projects are carried through and the potential savings realized.

Begin at Home

Furthermore, in order to extend the benefits of purchasing service most effectively, we should also let it be clearly known that we are available and what we are available for, and to encourage other departments to use our purchasing facilities and know-how to full capacity. In every large organization there are many individuals who do not have a clear cut conception of the purchasing function, yet whose actions and decisions have a material effect on purchasing performance.

At one of our factories, we have started a program of informal talks at pre-arranged foremen's meetings, covering various phases of the company's operation and showing how they all dove-tail into the overall plan for attaining our common objective. Reports following these meetings have been very favorable: the men were not only interested, but benefitted in a practical way by learning how each phase of operation and administration contributes to the work of other departments and how intelligent cooperation works to the advantage of all. Purchasing collaborated in this program. Subjects covered included the necessity of having information as to stocks on hand and anticipated usage, follow-up, inventory control, and the like, as well as a general review of current market conditions, price and cost control, and the necessity of full compliance with all governmental regulations. Prior to this, many had thought of the purchasing department only as a procurement agency and as the final exit gate through which company expenditures had to be checked. A better working knowledge of purchasing objectives and procedures has helped both the purchasing department and the factory departments, and has resulted in much closer cooperation.

Two-Way Service

Aside from our daily contacts within our own organization and with a variety of suppliers' representatives and their engineers, let us overlook no possible avenue of information on up-to-date ideas, materials, methods, and alternative ways of meeting a requirement. Contacts with fellow members of our Purchasing Agents Associations can be very valuable; some of these men may have a good suggestion to set us in the right direction, or they may have the very answer to our problem in their own experience. Success in purchasing is not a matter of "knowing it all", but of knowing how and where to get the desired information. Are we getting the most out of the many available channels now open to us—trade publications, purchasing and engineering registers, Association services, and frank discussion with selected salesmen who contact numerous other industries and are in close touch with what is going on?

And are we putting at the disposal of other departments and of Management the full resources of our special information? Take the subject of inventory policy as an example. Perhaps the ultimate decision lies outside the province of your department, but you are vitally concerned and your knowledge and judgment of markets can contribute much to the soundness of that decision. After the foreseeable demise of OPA and its controls, the law of supply and demand will again be permitted to function, and selective buying will again be in order. There may be too much optimism on the length of the buying boom. Some high priced commodities may react downward sooner than expected. A timely warning by the purchasing department when such conditions apear may be the means of preventing substantial inventory losses.

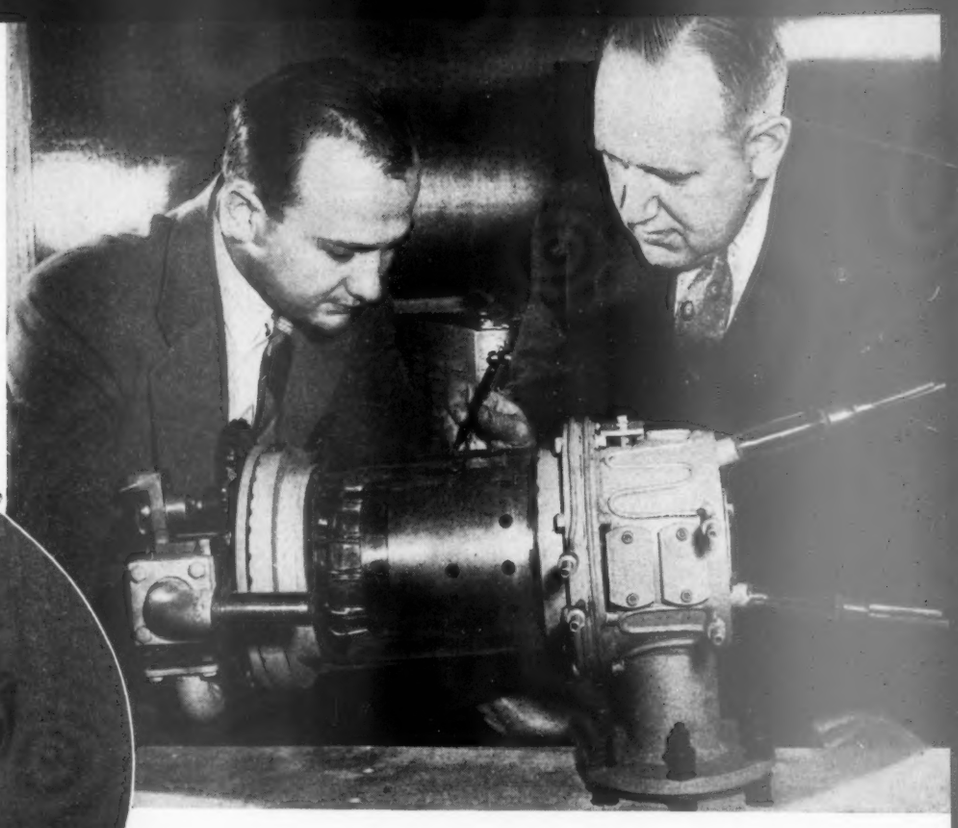
I am confident that a nationwide survey of a representative cross-section of purchasing men, if it were possible to get a frank report on the facts, would disclose a surprisingly large percentage of extended purchase orders and uneconomic pyramiding of purchase commitments. In some cases this is the result of definite instructions from above; in other cases it simply looks like a good idea to assure the procurement of ample supplies to cover optimistic estimates of requirements. If this were confined to isolated instances of gambling in materials, no great harm would be done, and the individual companies would bear the risk. But in the general acceptance of such a policy and practice lie the great hazards of inflation and economic loss that are inherent in overbuying and overstocking.

The purchasing profession, in common with others, has definite responsibilities to assist in the stabilization of business, to keep demand on a realistic plane, to counteract unreasonable price increases, to act as a balance wheel, to discourage overbuying on a too quickly rising market—in short, to do our part in levelling out the humps in the business curve.

Economic Implications

Our job right now is to resist excessive demands. Our goal—to purchase for real value, through an aggressive campaign of purchase research, seeking better methods and design, and lower cost alternatives that will keep production rolling.

Finally, we should let Management know what we are doing, preferably by means of a factual progress report, monthly, quarterly, or at least annually. Submit a concise statement of purchasing performance, procurement difficulties that were surmounted, a list of purchase cost reductions with a few typical examples, and a condensed comment on the full scope of purchasing activities. Such a report provides us with a wholesome review and check on our own performance, underscoring the opportunties for service and accomplishment through purchasing. More important, it emphasizes the fact that purchasing is most effective when it cooperates with all other departments and that Management is most effective when it utilizes the facilities and the know-how of its purchasing department to the full extent. For production and profits start with purchasing.



Radar, weapon of war, has increased the research man's facilities for accurate time measurement a thousandfold

ENGINEERING FOR TOMORROW

By CHARLES A. SCARLOTT
Manager, Engineering Publications
Westinghouse Electric Corporation, Pittsburgh

Amazing new developments and improvements in the production of power are now coming to the stage of practical application and promise great advantage to industrial users

Chemistry, metallurgy and electronics are also opening new fields for alert buyers

DURING the war we were promised that numerous fabulous research and engineering developments born of the emergency would be available for peacetime use. Many more were slyly implied, the essentials being withheld under the excuse of censorship. In any event the chroniclers of industry aroused among both laity and engineers a great expectation. It is now proper to ask: "Is science and engineering to make good on those promises? And how soon?" I shall attempt to answer for one corner of those promises.

Nothing would affect industry more than a revolution in the production of power. Energy is basic. Alter the availability or cost of energy, and you touch mightily every phase of industrial life.

What has the war brought in this regard? More specifically, what do the goings-on at Oak Ridge and Hanford connote in the power field? Much, I believe.

Production of Power

Salmon fighting their way up the Columbia River this spring to spawn are due for a surprise. In a distance of a few hundred yards at a section along the lower stretch of the river, they will experience a quick drop in temperature of the water. Doubtless this is of no significance to the fish, but it is to you and me. At this spot a portion of the river is detoured from the channel, forced to take a circuitous route through a maze of equipment the like of which you and I never saw, returning to the river several degrees warmer for the experience. It is, in short, carrying off heat from the controlled breakdown of the atom. The heat—a few hundred thousand kilowatts of it—is being developed by Hanford's atomic-energy piles, the first commercial-size ones in the world.

Quite aside from the nasty military implication of all this—for the heat is being developed purely as a worthless by-product of bomb-material manufacture—you and I can't afford to ignore this. It is not enough to say: "Atomic power won't be economical. It can't compete with fuel."

No one can speak with any finality about any phase of nuclear en-

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From a paper presented at the Machine Tool Forum held at Westinghouse Electric Corporation, Pittsburgh, Pennsylvania, April 9 and 10, 1946.

ergy, military or commercial. The best that can be done is to set down a few salient points that will help us estimate if and when nuclear-energy power plants become competitive with fuel-fired stations. Nuclear energy has three hurdles to surmount: governmental, economic, and engineering.

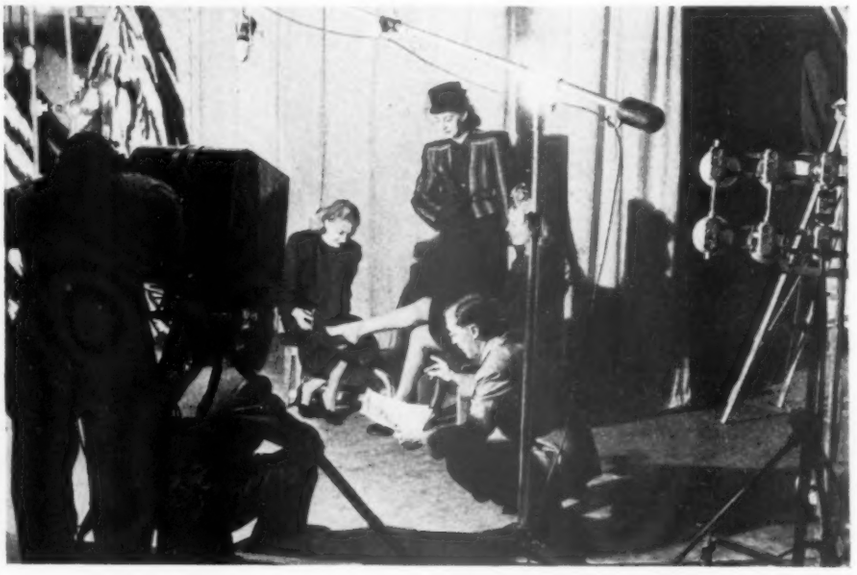
1. The extent of government restrictions is at this moment anyone's guess.

2. The economic hurdle does not seem too formidable. Calculations, which any engineer can make, using reasonable investment costs for power plant and transmission systems and using published figures for pure and unenriched uranium, show that purely from a cost standpoint a nuclear energy power plant of one thousand kilowatts or larger can compete with coal-produced electric energy in many regions of the country.

3. The technical obstacles to a uranium-fission power plant look pretty tough and probably will be the ones that will shove its commercial realization several, if not many, years into the future. The development of shielding the personnel from the radioactive end products of fission, the design of remote controls, and the solution to a whole new brand of radioactive corrosion problems are technical difficulties of the first order of magnitude.

4. Another possibility not to be overlooked is that other means of unleashing floods of nuclear energy may be found. This may be either by fission of heavy atoms into elements near the middle of the atomic scale, or by synthesis of lightweight elements into heavier ones. Heat from the sun is thought to be energy released from the combination of hydrogen atoms with helium atoms by successive nuclear reactions.

In all human experience we try to interpret the new in terms of the old, and thereby often misjudge the new. That may be what is happening with atomic power, just as the first automobile was conceived as a buggy driven by an engine. Perhaps atom-fuel power will be of greatest use at places on the earth where there is now a fuel famine. An atomic power plant, requiring no coal and little water, may be the factor that will turn the desert or polar wastes into useful areas of the globe, bringing within man's reach the mineral treasures those regions possess. Certainly, unlike the poor fish in the Columbia River, we cannot ignore atomic energy. It is of major importance to us as engineers, and even more important as citizens of the world.



Television. Prewar range — 50 miles; today — 200 miles, by stratovision

Molybdenum. From the electronics laboratory has come new availability for a wide variety of industrial applications, at 65% lower cost, all within the past few months

Gas Turbines

Much closer at hand is the gas turbine. On the assembly floor of the plant where Westinghouse makes steam turbines is a machine 26 feet long, 3½ feet wide, by 6 feet high. It is a complete 2000-hp gas turbine, gear, and a direct-current generator. A Diesel-generating set of the same horsepower occupies a space of approximately 20 by 5 by 10 feet, or about twice as much cubic footage. The Diesel also weighs 15,000 more than the 35,000 pounds for this gas-turbine and generator. This gas turbine is only about half as efficient as the Diesel—some 18 to 20% as against 30 to 35—but its fuel costs only about half as much per pound as Diesel fuel. Because this experimental gas turbine is of the simplest form—that is, it has no intercoolers or heat exchangers—it can burn low-grade petroleum such as bunker C.

The success of the gas turbine is closely bound to temperatures. Whereas steam-plant engineers are pretty well stalled at about 1000 degrees F, at which steel glows a cherry red, gas-turbine engineers calmly speak of 1300 degrees F. This 2000-hp experimental unit is designed for a top operating temperature of 1350 degrees F. In a building 300 yards away from where this 200-hp unit is awaiting test, another and quite different type of gas turbine is in production. It is for jet-propelled aircraft. For this purpose, service life can be acceptably shorter, so the heat at the turbine inlet is allowed to go to 1500 degrees. At this point efficiency climbs well above 20%. And if metals are developed that can take the hell of 1800 degrees F, the efficiency of the simple open-cycle gas turbine crowds 30%.

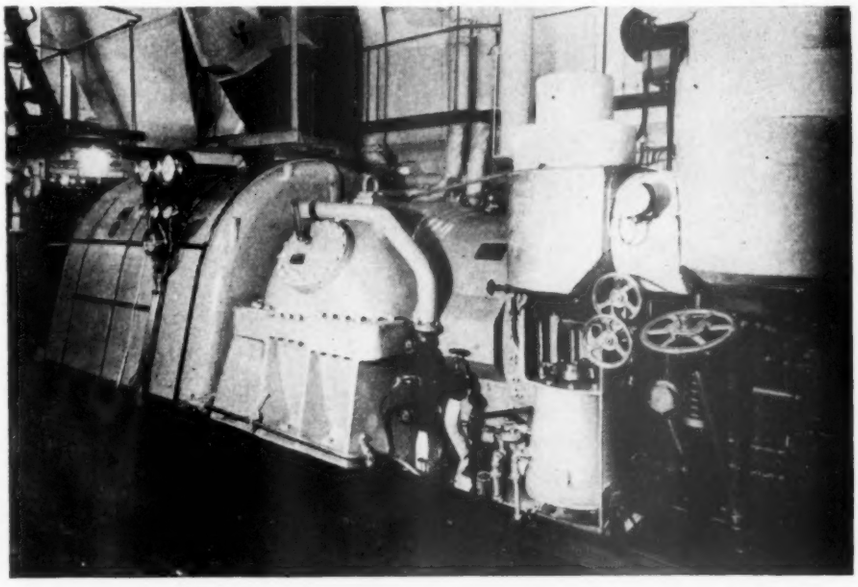
Package Power Plants

During all the discussion about "pocket-size" power plants, a-la-fissionable atom, the designers of conventional steam plants have been

doing not so badly themselves. They have produced a type of compact power plant that, while it is not "pocket-size," is a relatively small package. It is indeed called a package power plant. It consists of a complete power-generating unit—steam turbine, a-c generator, steam condenser, and all auxiliaries such as pumps, on a single bedplate. Indeed, the condenser provides the foundation for the turbine, generator, and auxiliaries.

This first unit develops 5000-kw. It occupies a floor space of 13 by 31 feet and stands 17½ feet high.

This package power-plant is very close to being a plug-in unit. It can be set on prepared supports, the water, steam, and electrical connections made, and it is ready to produce power. This simplicity of erection is one of the prime factors that led to the creation of the package-power-plant idea. It is expected to have its greatest use abroad, where power-plant design and erection facilities are lacking.



Compact self-contained power units are revolutionizing our ideas of plant design and efficiency

Railroad Locomotives

In October, 1944, a new type of railroad locomotive took to the rails. It was puffless and pistonless. It was powered by a steam turbine connected to the wheels by a double-reduction gear. It was the first such locomotive built in the United States and was the result of joint efforts of Westinghouse, Baldwin, and Pennsylvania Railroad engineers. This locomotive has been in service since early in the winter of 1944 hauling, on regular schedule, Pennsylvania's crack passenger trains into and out of Chicago. Never once did any misbehavior of the turbine or gears make a train late; never once did the turbine or gears take it to the shop for more than routine maintenance.

Five weeks ago our engineers had their first opportunity to look at the turbine blades and to examine the gear teeth, which had been carrying loads nearly double those allowed in marine practice. After 47,700 miles in revenue service the turbine casing and gear covers were lifted. Turbine blades and gear teeth were in perfect condition. No repair is needed. They appear to be able to run indefinitely.

This performance of the first of a new type of locomotive is remarkable. It develops one fifth more power at high speed than piston engines using the same boiler, it is that much more efficient. It has no reciprocating parts. Its torque flow is continuous. It has, in short, many attractive features for railroad men.

Gas-Turbine Locomotive

The gas-turbine locomotive is likely to be heard from soon. The 2000-hp experimental gas turbine described earlier is of the sort that would be used on a locomotive. This unit, as previously stated, is only 3½ feet wide and 26 feet long. Hence two units would go lengthwise in the locomotive, occupying only 26 feet of locomotive length, or a locomotive of 4000 hp would be only 40 to 50 feet long. This would be a remarkably compact unit.

Although Diesel-electric locomotives have been in development for nearly 20 years, the best that can be done as yet is 3000 hp in a single cab, 90 feet long.

The gas-turbine locomotive is yet to materialize, of course. We must not go overboard on its behalf until a unit has proved itself by hauling trains. However, there is every indication that it will be a major competitor in the railroad motive-power field. It can burn low-grade low-cost (bunker C) petroleum—and if present major-league research is successful it will burn coal. The gas turbine has no reciprocating parts, few lubrication problems, smooth torque flow, and can be built in as large horsepower sizes as is required.

Aviation Gas Turbines

The gas turbine is certain to become a useful new engine for locomotives, ships, and perhaps power stations. This will come about years sooner than otherwise because of the war and military aviation. To answer the demand for greater speed in the air than could be provided by reciprocating engines, aviation authorities turned to the jet-propulsion type of gas turbine. Jet-propelled airplanes have already established breathtaking speed records—and jet engines are just in their infancy.

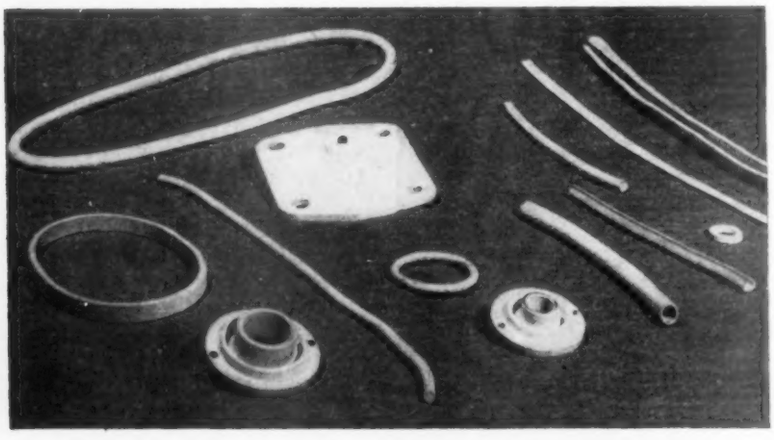
Jet engines have been steadily produced by Westinghouse for the Navy. Although the Navy, characteristically, has permitted very little publicity on these engines, two were shown to the press last November. One is 19 inches in diameter; the other is a little one, 9½ inches in diameter, and can be carried by one man. The little one was originally intended for an American version of a buzzless buzz bomb. At that press showing last fall the Navy, although normally reticent about releasing performance figures, allowed these engines to be discussed in unlimited detail. The reason for such uncommon frankness was that these two engines are obsolete. Larger and much more efficient engines have already been built. Although data on these has not been released, it can be said that these engines produce more output for a given weight than any engines of any type built anywhere. They develop better than a pound of thrust for a half pound of weight. Also they have less than one half the frontal area of reciprocating engines of comparable output. Hence the so-called "barndoor effect" so

costly in aeronautics is greatly reduced.

Indeed the aviation gas turbine is a big new business. The gas turbine with its absence of reciprocating parts, its astonishing simplicity, its low frontal area, its high output per pound of weight, and the virtual absence to limit to sizes, is a new form of engine that promises great things for all aircraft except the small, slow-speed craft—where the reciprocating engine is expected to remain dominant.

Radar

Although radar will, of course, be of great use as a navigational tool both on the water and in the air, it will have many by-products of merit.



Silicones, barely two years old, have already established themselves as one of the most useful of the new materials

For example, it is interesting to contemplate that the frequency spectrum, that is, the band of frequencies that engineers are able to put to practical use, has been increased one hundred time, mostly because of radar developments.

Another interesting by-product use is our greatly increased ability to measure accurately short-lived events. Radar has made it possible to time accurately intervals of one thousand of one-millionth of a second, which is roughly better by one thousand times than was previously possible. The ability to work in this new frontier at the lower end of the time spectrum is important. It opens up for man's experimental study and eventual control a world of events previously unknown to him. It will facilitate studies of ionization, de-ionization, spark-discharge formation, and many other ultra-brief transient phenomena.

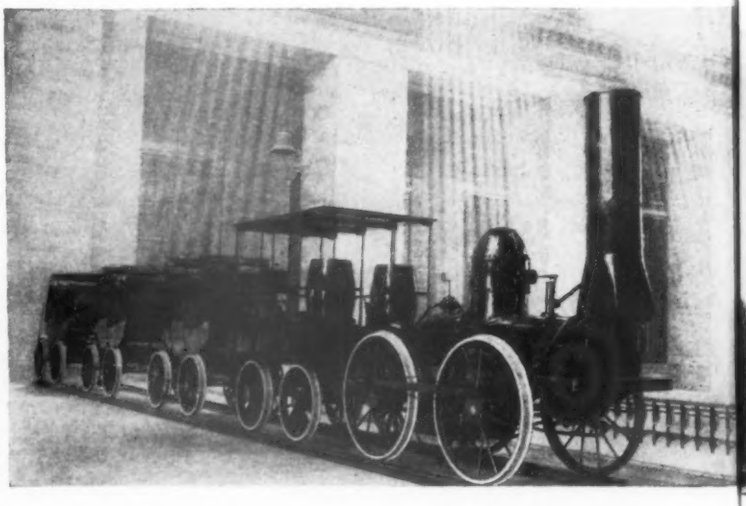
Television

Radar has contributed importantly to another of the miracles of science—television. The great concentration of research work and apparatus development that has made radar possible has swept away the principal remaining technical problems that so long kept television is just around the corner. Engineers are no longer in any doubt about being able to present in the homes of America high-quality pictures of current events. Furthermore, they have confidently announced their intention of producing sets for high-definition television pictures in color.

The big obstacle to television—and it is huge—is financial. This arises out of the fact that a television or FM broadcast station, unlike standard long-wave AM radio, can't reach very far. Almost literally, a transmitter of television frequencies is limited to line-of-sight distances, or about 50 miles, even with the antenna on a hilltop or high building. To establish a single television chain across the country—i.e., to broadcast a presidential inauguration to a San Francisco audience—seemed to require the investment of hundreds of millions of dollars entailed in either a chain of more than one hundred relay stations, or a transcontinental coaxial cable. The cost of covering by either means just the major metropolitan cities of the country would require staggering sums.

Radar has, in a curious and indirect fashion, helped provide a solution to this problem. Early last spring a 27-year old electronics engineer was returning by air from the West Coast to our industrial electronics plant in Baltimore. As he flew over the rather monotonous plains of Texas he contemplated these limitations to television. The environment of his plane and his intensive war experience with radar were propitious to give him a brainstorm. If the problem is antenna height why not put it in an airplane where it can be seen not just 50 miles but 200 miles away? This startlingly simple and seemingly obvious conclusion was not a wholly new idea, but unlike others, this engineer pursued the idea with vigor, providing a thorough going analysis of the whole problem. As a result, the system of television and FM broadcast called Stratovision was born and has undergone preliminary flight testing. Beginning last December a B-25 modified by the Glenn L. Martin Company has been used for experimental purposes broadcasting voice and music modulated television frequencies from elevations of 25,000 feet. Signal strengths have been measured at various points along the Eastern Coast as the plane made the flight from Baltimore to New Haven, Connecticut. The results of these early tests verify the calculations as

YESTERDAY



Great technical advances have been made in the field of railroad motive power, and further progress is in sight

being surprisingly accurate, sufficiently so as to show that the basic concepts of Stratovision are sound.

Motors

Not all the interesting developments are in the still new and glamorous fields. It is significant that we find in an old established field of engineering such as the motor, a continual flow of new ideas and improvements. One might think that by now all the different kinds of motors have been built and that relatively few major improvements are possible in such an old established line of apparatus. To show what I mean, I will simply make mention of a few interesting recent ones.

A very special direct-current motor, weighing only 8½ lbs., but developing a power of 22 hp, was produced at the request of the Navy to accelerate the gyroscope of an electric torpedo. This motor is able to bring the gyroscope motor from standstill to 12,000 rpm in one-fifth second. Another direct current motor, weighing only 31 pounds, but developing 18 hp, is used to bring the rotor of a gas turbine from standstill to 2,000 rpm in 15 seconds. Special small induction-motor armatures were built for the atomic bomb project that were able to withstand 500 degrees F at a high vacuum without formation of gas by any of its insulating materials.

Although the speed range of the direct current motor has been commonly assumed to be about four to one by field control, engineers recently have been able to extend that speed range to eight to one by a relatively simple scheme of reconnecting and separate control of magnetic poles.

Basic to everyone's operation is materials. And this field is particularly rich in new developments.

The electrical industry has needed a moisture-proof insulation since its birth. But World War II made a solution mandatory. Insulation on radio and radar apparatus in tropical and Pacific areas, for example, undergoes a terrific beating from temperature variation and moisture. It may be carried quickly from the boiling sun of a landing strip at a temperature of 150 degrees F to the 60 below zero cold of a high altitude. On return to the humid air of sea level the apparatus heavily frosts over, which soon melts to penetrating moisture. Ordinary varnish-treated transformers can withstand these routine combinations of heat shock, humidity, and salt air for only a few hours, a few days at most.

Ordinary varnishes consist of about 25 to 50% solids carried in a volatile solvent. The varnish sets by evaporation of the solvent, leaving obviously an insulation porous by the amount of space occupied by the solvent. N. C. Foster, one of the group that produced the sink material, applied a neat bit of reasoning to the problem. If, Foster reasoned, an insulation could be made without volatile solvents, there would be no voids for destructive moisture to enter. He thereupon set about to create just such a material, which now carries his name. In Fosterite the solvents react chemically under heat with the solids to form the thermoset solid insulation. Assuming that all air has been sucked out before the Fosterite is applied, there can be no voids because nothing leaves during processing.

Fosterite - treated transformers have been made by the tens of thousands for the military forces. No record of failure in service due to moisture has been reported. Each transformer so treated is, after assembly, allowed to soak for two hours in 150-degree F water and is then plunged into 75-degree F water for two hours. They must then be able to operate normally.

Silicones

Two years ago, a new material flashed into the insulation sky. It was silicone. Its high-temperature characteristics were too good to be true. By now engineers have had better opportunity to evaluate it, although that task is barely begun. This much is sure, in the insulation firmament Silicone is a star of the first order of magnitude.

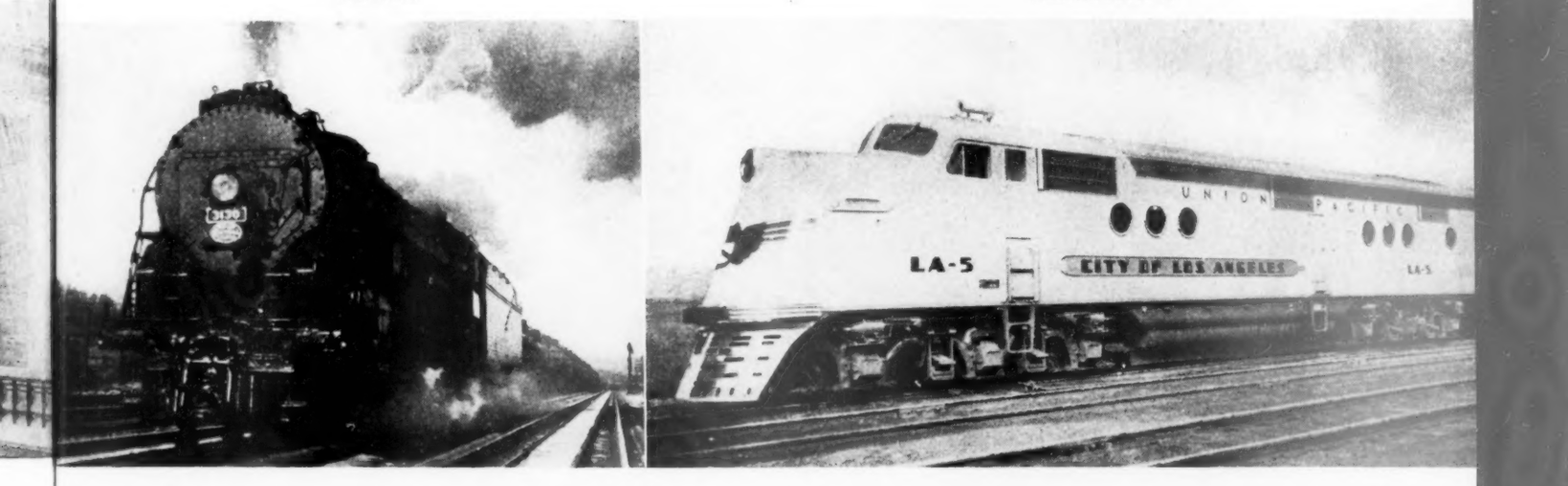
The engineers of Dow Corning, the firm that makes the stuff, and those of Westinghouse, who apply it to electrical apparatus, set about on a test program nearly two years ago at Midland, Michigan. Direct-current and induction motors were equipped with silicone-impregnated insulation—such as glass tape, mica, asbestos, etc. These motors were then placed on test stands and run on severe test cycles of load and temperature. Each run at some selected high temperature is followed by shut down and a severe humidification dosage. Following insulation measurements another heat run would ensue.

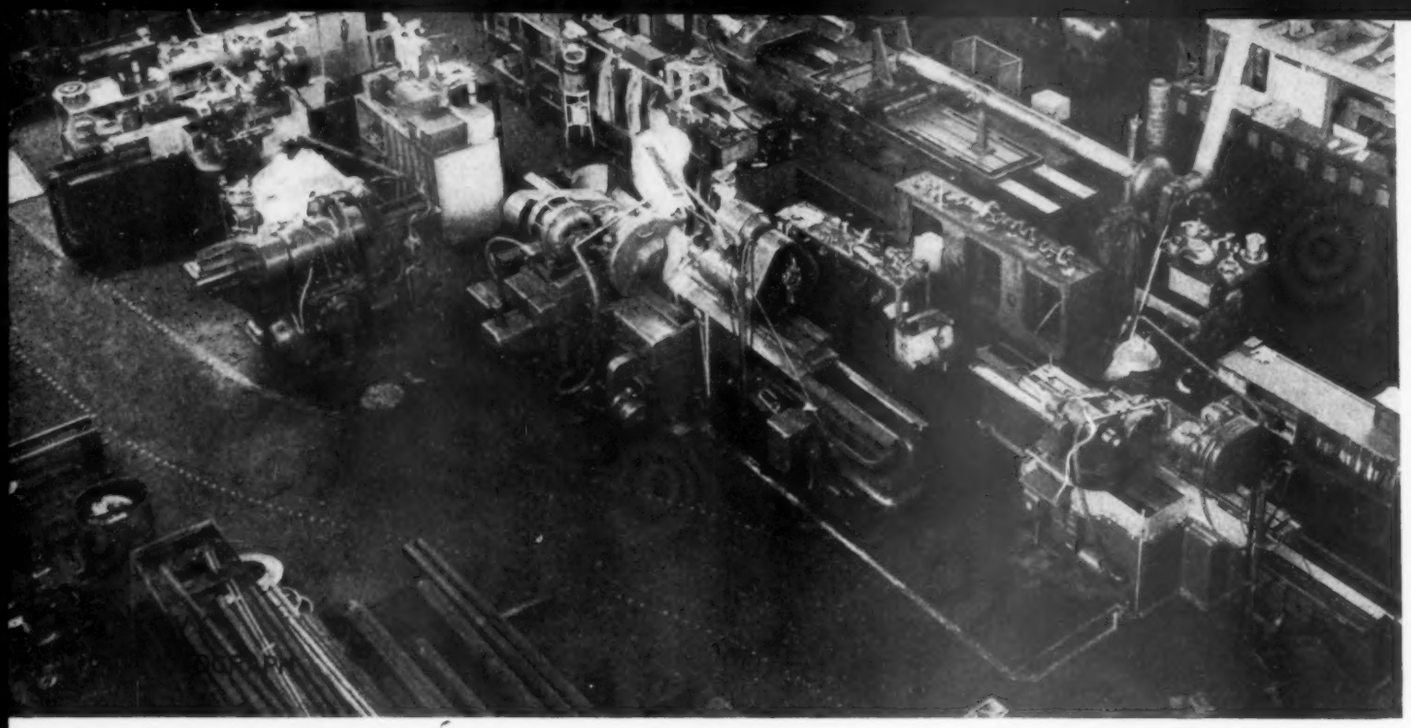
The tests are still unfinished, because in spite of this extreme punishment these motors (as of February 1) have not failed, although some induction motors have operated for a total of 4000 hours at 580 degrees F.

It is apparent already that the high degree of temperature stability originally hoped for from silicone in-

(*Continued on page* 308)

TODAY **TOMORROW**





Keeping materials moving smoothly to successive operations requires planned routing as well as efficient equipment.

CUTTING COSTS through

Frequently the cost of handling materials is not segregated in the accounting system, yet in this one item may lie the opportunity for substantial savings in the real cost of purchased materials, in storage, and production

By A. H. DOBLER
Electric Truck Division
Yale & Towne Manufacturing Co., Chicago

BEFORE Pearl Harbor, the pallet was a little guy in diapers. But the demands of war led industry and the Army and Navy to force-feed the infant. As a result, we now have a husky adolescent on our hands. And like most adolescents, he's a bit of a worry. We haven't quite figured out completely how well he can be fitted into our production and distribution picture. We know he has a lot of good qualities, but practical guidance with a firm hand is what he needs.

So far, those of us who accept the pallet as a load carrier have taken a pretty narrow view of its potential in material handling operations. We have confined our thinking to the time and money its use saves with modern handling equipment in our own operations.

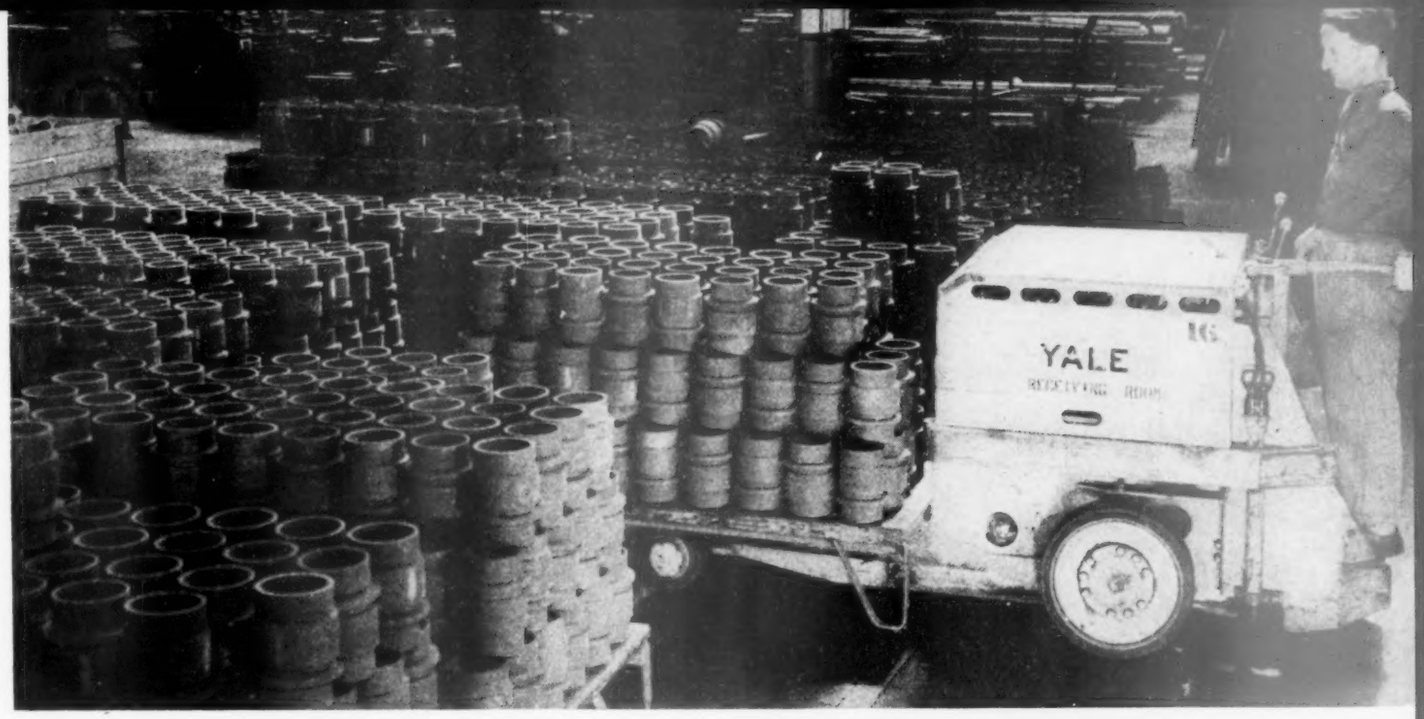
More Use of Pallets

What we need to do is to look at it objectively. By this I mean we should think how much more all industry would cut costs if everyone received material and shipped finished products on pallets. After all, all of us make products to sell and want them delivered as fast as possible, so if shipping unit loads on pallets "all the way" will cut costs, let's do it. Every manufacturer gains when he receives and ships on pallets. And that goes for the railroads and trucking companies too. They don't have equipment tied up at plants so long when loading and unloading time is cut down. That means more efficient use of common carriers.

Sure, there has been a lot of talk and reams of editorial on pallet applications, how much pallets cost or should cost, what they should be made of, and what might be done about getting them back for re-use. We've hemmed and hawed about forming a pallet pool, and whether or not the railroads and other common carriers should own them. You can undoubtedly think of a dozen other considerations that have come up.

But the main thing, as I see it, is to get down to business and do something about it. With the vast amount of goods that's going to be shipped every day from now on, and all the talk about high distribution costs, we simply can't hold off any longer. We should act now—decide on pallet sizes and construction so

Includes much more than invoice cost. Better handling of material means substantial savings.



Efficient handling of parts to and from temporary zones helps maintain a controlled flow pattern to individual machines and work areas.

better MATERIALS HANDLING

that we can use freight car, truck, and ship capacity to the most economical advantage. We should show the railroads that the cost of deadheading empty pallets is far too high and have them get action on a rate change. It simply doesn't make sense to pay more for re-shipping empty pallets than it does to ship goods on them.

In the past, pallets have been constructed to fit individual package sizes so that packages shipped by a given company would fit on them without waste space. But with standard pallet sizes—and as sure as I am standing here we will have standard sizes one of these days— we are going to find it necessary to do some tall thinking about package sizes. We are going to find it necessary to fit them to these standard pallets. So there's a future job in package design.

But when we talk about palletizing loads, and about receiving and shipping "all the way" on pallets, we don't go back far enough in our thinking about the seriousness of the material handling problem that exists in practically every plant. And the reason this is true is that too few plant operators have the idea that material handling is important enough to select a man, committee, or department to see that material is received, moved through processing operations, or put into shipping in the most economical way possible.

Material in Motion

Most plant operators don't know or don't fully appreciate that the handling of material in a plant eats up from 25% to 40% of production costs. The reason that management is not conscious of such figures is that the cost accounting systems of most companies don't show what is paid to workers hired specifically to lift and move materials. In other words, it is not at all uncommon in time studies and cost accounting to allocate some material handling costs to production—or to charge them to overhead as "indirect labor payroll' on the operating statement of the company.

Industry has done a marvelous job of mechanization of specific processing operations but such mechanization is only the beginning. You have whittled dollars, cents, and mills from the cost of producing goods. But it appears that machines have reached pretty much a peak in efficiency and that refinements in

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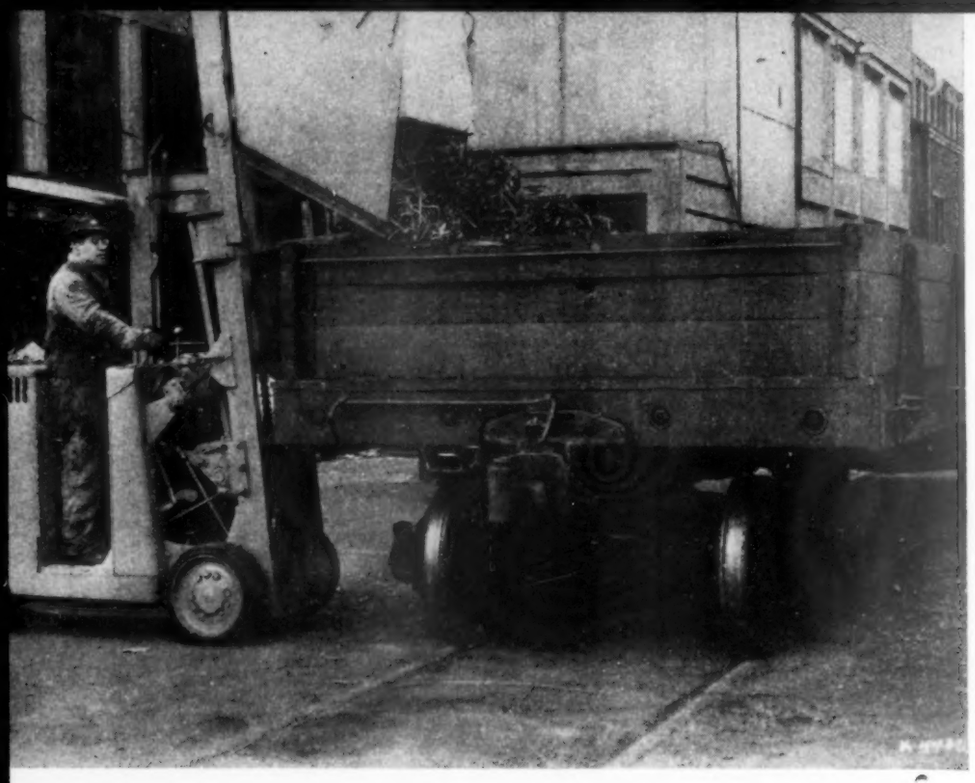
Address before the Industrial Packaging Engineers Association of America, Chicago, April 24, 1946.

30% of Manufacturing Cost consists of Moving Materials. Production efficiency can be offset by deficiencies in handling.



Proper handling equipment facilitates scrap disposal and keeps production lines clear of congestion.

products now offer the only appreciable means of cutting costs still further.

All this adds up to the fact that until management sees that production is material in motion and learns how to keep it moving, little future progress can be expected in cutting costs. When the modern plant is looked upon as a material handling system, then and then only will it be possible to gouge the dead wood out of the production dollar.

But the belief that the modern plant is basically a material handling system isn't quite enough either. Management must act upon that belief—do something about it. And there is only one way to do something about it. Sure, we can say put in cranes for this or that job, use a conveyor here, or a hoist there. Get yourself a hand lift truck for this work, or use a power truck for big loads. But that isn't the answer. These recommendations never gave anyone a material handling system. Industry has been doing that kind of buying for years, and still it takes at least 30% out of every production dollar to keep material on the move.

The only way to cut the cost of material handling is to streamline the flow of production. A good beginning is to admit that material handling is a big enough cost to warrant the appointment of a man or a group of men to study your plant layout, analyze production flow, and make use of the kind of material handling equipment that will coordinate all operations into a smooth running whole. In other words, appoint and give these men the authority to do what ever is necessary to keep material in motion economically.

Just what can this man or committee or department accomplish by accepting the principle that handling adds nothing to the value of your product, but only to its cost? Let's enumerate some of the advantages that come along with the planned application of modern material handling machinery and methods.

Production Economies

To begin with, you get fast movement of material in quantity. You coordinate its flow with the speed of your production machines. You shorten the processing cycle by setting the pace of production. That alone is a worthwhile objective.

You eliminate the cost of rehandling individual pieces. To give you an idea of just what this means, just assume that the incoming daily tonnage of a plant is 10 tons. Wasteful, time-stealing rehandling, piece-by-piece, may multiply that tonnage a hundred times before finished products are shipped. Surely any system that cuts down on rehandling has a real merit.

Next, planned material handling methods and machinery make it possible to avoid a lot of the "muscle moving" that raises cain with human energy. Yes, it wipes out one of the most potent factors — man handling—that now limits productive effort and worker safety. A tired worker can never do a 100% job. It's one of the reasons why industrial insurance rates are still so high. Any insurance company knows that when modern equipment and a sound method of handling material are used in a plant, there are fewer accidents.

A great many plants still depend on skilled help to bring material to and take material away from their work stations. After cutting corners to save a few cents on the cost of a part, many companies still spend a lot more to move it around. But with a modern handling system in the plant, these same workers stay at their machines—keep producing —while material is brought to them in quantity and taken away to other processes in quantity. In other words, mechanized handling cuts costs by creating better production control.

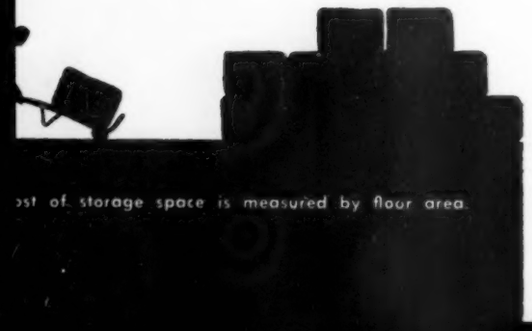
Because material in quantity can be quickly placed within reach of machine operators by adequate handling equipment, they do less reaching, lifting, and moving. So material handling machinery helps boost production in this way too. It always amazes me that these considerations have rarely shown up in time studies.

The Human Factor

Most plant accidents and losses through spoilage can be chalked up to the willingness of plant operators to go along depending on muscles to lift and move material — to let muscles handle and rehandle material unnecessarily. If you want to cut accident insurance rates and cut down on spoilage, you've got to use equipment and methods that do away with as much "muscle moving" as possible.

And, I think every one will agree with me that one of the best ways to improve employee relations in a plant is to take the sweat out of getting material from where it is to where it is needed.

Let's say that you now use 10 men to man-handle materials in your plant. They may grunt and groan all day, but as sure as a carton is a container, they can't possibly handle as much as fast as the right combination of men and machines. So if



ost of storage space is measured by floor area.

you want to put more men in productive jobs, use fewer men on handling jobs. Let machines lift, move, and stack whatever has to be scooted around in your plant.

Using Vertical Space

This brings me to another important point. I mentioned stacking just a moment ago. In the past, many a company built new plant additions because they thought more floor space was needed. What a waste of capital investment! With today's material handling tools, space can be saved on receiving and shipping docks, in the plant, and in the warehouse by taking full advantage of what we call "air rights." It means using vertical space—stacking to the ceiling if practical and necessary. By doing it mechanically there is a great saving in time and space.

Following this idea even further, we can see that neat, compact stacking is a sure way to keep better inventory records of raw material, material in process, and warehoused finished products. And I must point out that modern material handling equipment goes a long way in cutting down on the time and the cost of moving material into and out of storage. You will agree that it doesn't make sense to have crews of men pile up stuff piece-by-piece, but that it does pay to high stack and move big unit loads on pallets, on skids or in skid bins.

So by taking advantage of vertical space in the plant or warehouse, you can in many cases forget all about adding a bay or putting on a new wing. Yes, I have seen a great many instances where the use of a good, well-planned material handling system eliminated faults in plant layout and so stepped up productive capacity, doubled storage capacity, and sliced costs.

There is only one more point that I would like to make about the advantages of appointing a man or group of men to devote their time to working out a practical material handling system and putting it to work. That point has to do with demurrage charges. When goods are handled as unit loads, trucks, freight cars, and ships can be loaded and unloaded in a fraction of the time it takes a crew to do the job. That means a real saving in demurrage charges—and you know how they can pile up if material isn't moved in a hurry.

Analyzing the Problem

Here, then, are some of the results you can look for when one person or a committee is given authority to streamline the flow of production. But the question is how can these advantages be achieved? In other words, what do these men have to know in order to do a real job. Well, I've put down a number of things that they've got to consider. These points will give you some idea of what we have had to think about when studying a plant. They make it clear that material handling is more than a push and a shove. It's a job that needs special attention.

Modern handling equipment is adapted to all sorts of products and packages.

First off, your man has to know the types and number of material handling machines now used in the plant. He's got to know the load capacity of each type of equipment and where it is used. These facts give him a picture of the tools he has to work with and may suggest what equipment changes, if any, are necessary to streamline the flow of production.

Next comes the kind of containers used to carry the material. These may be anything from a barrel or bag to a tote pan, skid or pallet.

Then he will want to know how many of these loaded containers are handled at one time, and per day. Of course, this information should also include the pounds or tons handled per load transfer, and per day, as well as the number of locations to which materials are moved.

He will want to know how many men are needed to lift, move, and deliver material during each handling step, and how far the material must be moved each time.

Then to get at costs, he's got to know how much time it takes to make each move to that he can use the hourly pay rate per man to translate that time into dollars and cents.

Here's another important point. Your man has to know the route taken when material is moved from one place to another. In fact, when he actually gets down to it, he is going to lay out the routes for each department in the plant. Yes, he's going to find it a good idea to put these routes down on paper. And here he may be due for a few surprises. Most likely needless back tracking or detours will show up. He'll see a lot of wasted travel time that's slowing up production. He may even find that changing the department or plant layout a bit will straighten out a lot of material handling problems.

He's got to record how many times material is lifted, moved, and set down during each handling step. Add to this the size, shape, weight, and number of units handled individually at each location. He has to have this information because as a

(*Continued on page 324*)

Vertical storage equipment adds a third dimensi

PRODUCT MATURITY . . .

A Factor in Procurement

By E. L. CADY

Every product passes through three stages of usefulness and acceptance—the introductory phase, standard application, and the "dying" period when new developments in materials and methods emerge to displace it.

This cycle has an important effect on purchasing policy; sound buying recognizes these phases in respect to purchased items.

ABOUT five years ago a brand new soluble cutting oil came into the market. The stuff combined the anti-weldant qualities of sulphur bearing oils with the wetting-out abilities of modern additives and the rapid heat absorption of the water with which it was mixed. In some cases the operating speeds of machines were increased 20% or more; in other applications it solved cutting problems which nothing else had handled.

Unknown to its makers and to its early users, this oil also had some faults. Its wetting out additive agents, the very things which caused it to dart so instantly to the tiny surfaces where the cutting heat was being produced, and to cover them completely, also caused it to penetrate to machine bearings where its anti-weldant ingredients did no good whatever.

A few of the most modern machine tool models had bearings so well shielded that not even this oil could get at them. In many other cases the question soon arose as to whether the benefits from the oil were worth the damage done to the machines.

To this could be added another drawback. If oil seeped from the bearings and got into this oil mixture, then the mixture would be thrown out of balance and refuse to do its best work. As a minor annoyance, the oil would find any tiniest leak at the packings of the

• THE THREE AGES OF PRODUCT DEVELOPMENT •

INTRODUCTORY STAGE

Product promises great advantages.

Not fully proved in service; limitations and complications unknown; further development probable.

Cost typically high, but may be offset by potential advantages.

Buying policy: Risk.

STEADY MARKET STAGE

Proved performance and wide acceptance.

Sets standards of efficiency; watch for steady process of improvement to enhance value and broaden applications.

Cost stabilizing downward with greater volume and experience in manufacture.

Buying policy: Confidence.

OBSOLESCENT STAGE

Competition from more recent developments.

Improvement tends to stagnate at maximum point; increased selling pressure used to hold existing markets.

Cost fixed; watch for possible greater values in competitive products.

Buying policy: Caution.

coolant pump or in any part of the coolant flow lines, and would seep out.

Procurement-wise, then, this oil then had to be analyzed and classified in several use categories, with varying degrees of desirability for different applications:

1. Highly desirable for machine tools which had been equipped with adequate bearing shields and seals by their makers.
2. Indispensible where it enabled work to be done which had never previously been done at a profit.

Advantages and Limitations

3. Worth while for machines which could be torn down and rebuilt so their bearings would be shielded and no lubricating oil could seep into the cutting oil, provided that the gears and shafts and other parts of those machines could stand the strains of higher production rates and the oil actually would increase those rates on the products being fabricated.
4. Worth while if the machines were being overloaded and run to junk to get rid of them.
5. A liability for all other machines.

Somebody had to pay for that information about this new and better cutting oil. The payment was shared between the oil maker who kept a force of sales engineers in the field to solve problems, and the early users who had to repair any machines that got damaged. But since the oil maker had to operate at a profit, the sales engineering cost was necessarily passed on to the purchasers in the prices they paid per barrel of oil.

The Second Stage

One the knowledge had been gained, several things happened:

1. The oil maker's sales engineers learned how to look at machine tools and tell whether or not the bearings were well enough shielded. They built up lists of machines known to be adequately protected, and of machines known to be unprotected.
2. The sales engineers also learned how the bearings of various machine tools could be protected, and at what costs for seals, for machining time, and for down time of the machines being rebuilt.
3. Knowledge of exactly what gains could be made with the oil, and on what metals, as machined on what machine tools, was increased.
4. Sales went up and prices levelled downward in so far as the economic situation of the times permitted any prices to go down.

The oil then had gone through two stages of procurement and marketing.

First had come the immediate acceptance stage in which the risks and the real costs of using the product were largely unknown but nevertheless the gains to be had from it sometimes were more than worth the risks. The price in this stage also was at its highest.

Second had come the steady market stage in which the risks and the real costs were known and could be compared against known gains to find real values. This knowledge would improve, of course, with every additional machining task to which the oil was applied. And the manufacturers would try to improve or modify the oil to eliminate some of its problems. Because of such constant improvements the steady market often is called the "improvement stage".

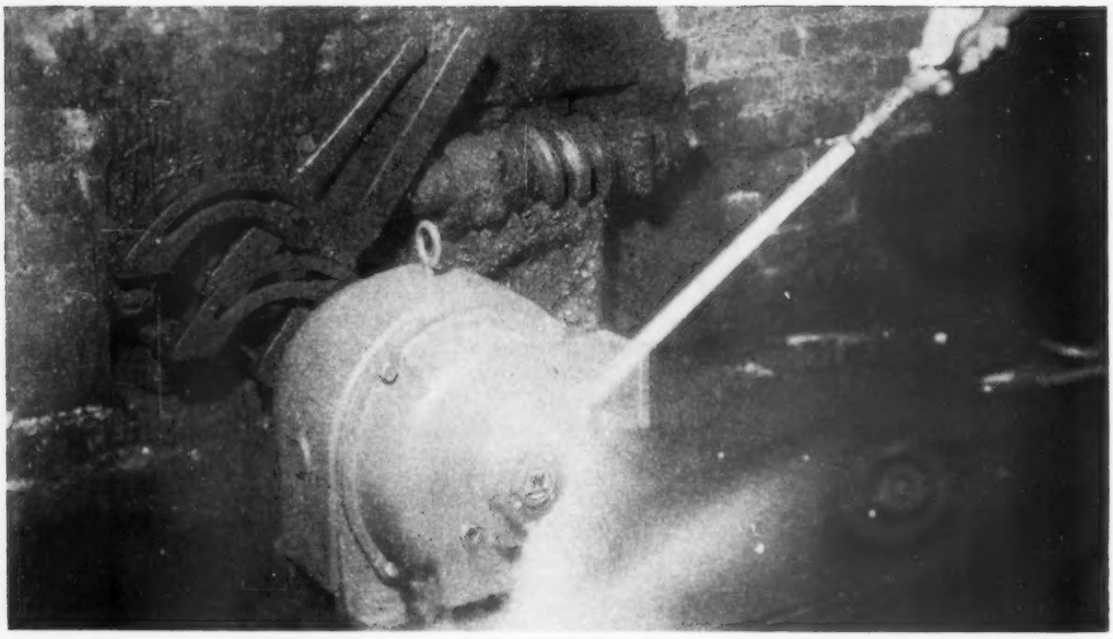
Products Past the Peak

In the meantime the oils which this one was displacing were going through the third or dying market stage.

The dying market product always is an interesting study in procurement.

First of all, its makers always try to improve it and thus to reverse its tendency to hold less and less of its established markets. If the improvements can be made then it becomes, to some degree, a brand new product which belongs in the immediate acceptance or the early phase of the steady market rather in the fully developed classification. Every improvement brings its risks.

Second, the price cannot be lower-



Splash-proof motor — not available a few years ago, now in well developed stage, reliable in performance, and enjoying a steady market.

ed unless the makers either had been charging unfairly high profits or had been neglecting opportunities to reduce production costs. Not only does the volume decline, thus causing a need to raise prices rather than a chance to reduce them, but also the sales and the sales engineering costs must go up in an effort to defend the product.

Users have been habituated to the virtues and faults of the old product. In fact, they may never have realized what all of the good things it was doing were nor what costs and troubles it was causing. The new product causes the good and bad points of the old one to stand out plainly. Where the new product looks very good the old one looks very bad, and where the new one causes new troubles there is nostalgia for the old one.

New Life for Old Products

The dying product may never have found all of its true markets at any time. Buyers and sellers alike are prone to let a product go just so far and then hold it there, to "share the business" between several products. But when the product enters the dying market stage, then sales engineering becomes desperately aggressive in pushing for every possible outlet. Then the product starts life all over again in immediate acceptance markets which it should have occupied as steady ones years before.

So it was with the established kinds of soluble cutting oils. Their makers improved them. They would have done so anyway, but the new product made them try harder than usual.

In the improvements they had new targets to shoot at. First was the chance to equal or approach the performance of the new oil, or even to exceed it. With this was an opportunity to be good where the new product was faulty. And every such improvement cut into the advantages of the new oil and reduced by just that much the desirability of procuring it and taking the risks of using it until it had fully proven itself.

With aggressive sales engineering they led their customers to take more interest in refrigerating or in controlling the operating temperatures of cutting oils, to keep the oils cleaner, to use standard mixtures which could be piped to batteries of machines or even to most of the machines in the plant. All of these developments had been under way for some time, but now they were pushed harder. And with the new product limited to machines in which it could not damage the bearings it was less suitable for central systems which supplied machines regardless of the protection of their bearings.

Market Equilibrium

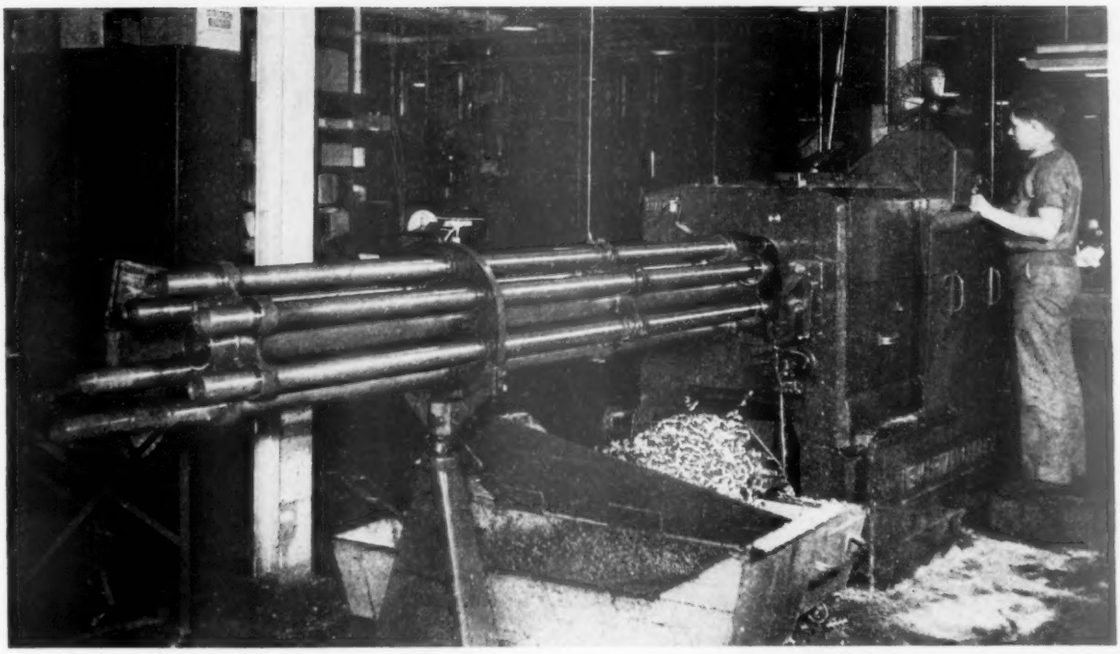
The situation reached a working equilibrium with the proper place for the old products as well as the new one becoming better known. Other new products came out. The net result was that cutting oils as a procurement problem and opportunity changed sharply. More knowledge was needed in order to buy them to best advantage. And this situation will continue. Cutting oils never again will be as simple to select as they were ten or fifteen years ago.

With every new process, material or machine this acceptance-steady-dying-equilibrium sequence is repeated. The point is to know just when new devices are likely to be entering their immediate acceptance markets, where and why they are likely to develop, and when they are likely to reach enough of a steady market status so they should be studied by any specific purchasing department.

Straws in the Wind

The jewelry industry is one to watch. Small as it is as a user of machine tools and a consumer of mechanical supplies the jewelry industry gave to the world drop forging, die forging, hydrogen atmosphere furnace brazing, and precision investment casting—to mention a few.

Behind these developments is the fact that jewelry makers must produce to intricate shapes while wasting the least possible of precious metals to scrap. Every one of these processes resulted in molding the metal instead of cutting it away, or in deoxidizing the metal rather than etching it away in pickling acids, or in substituting the engineering



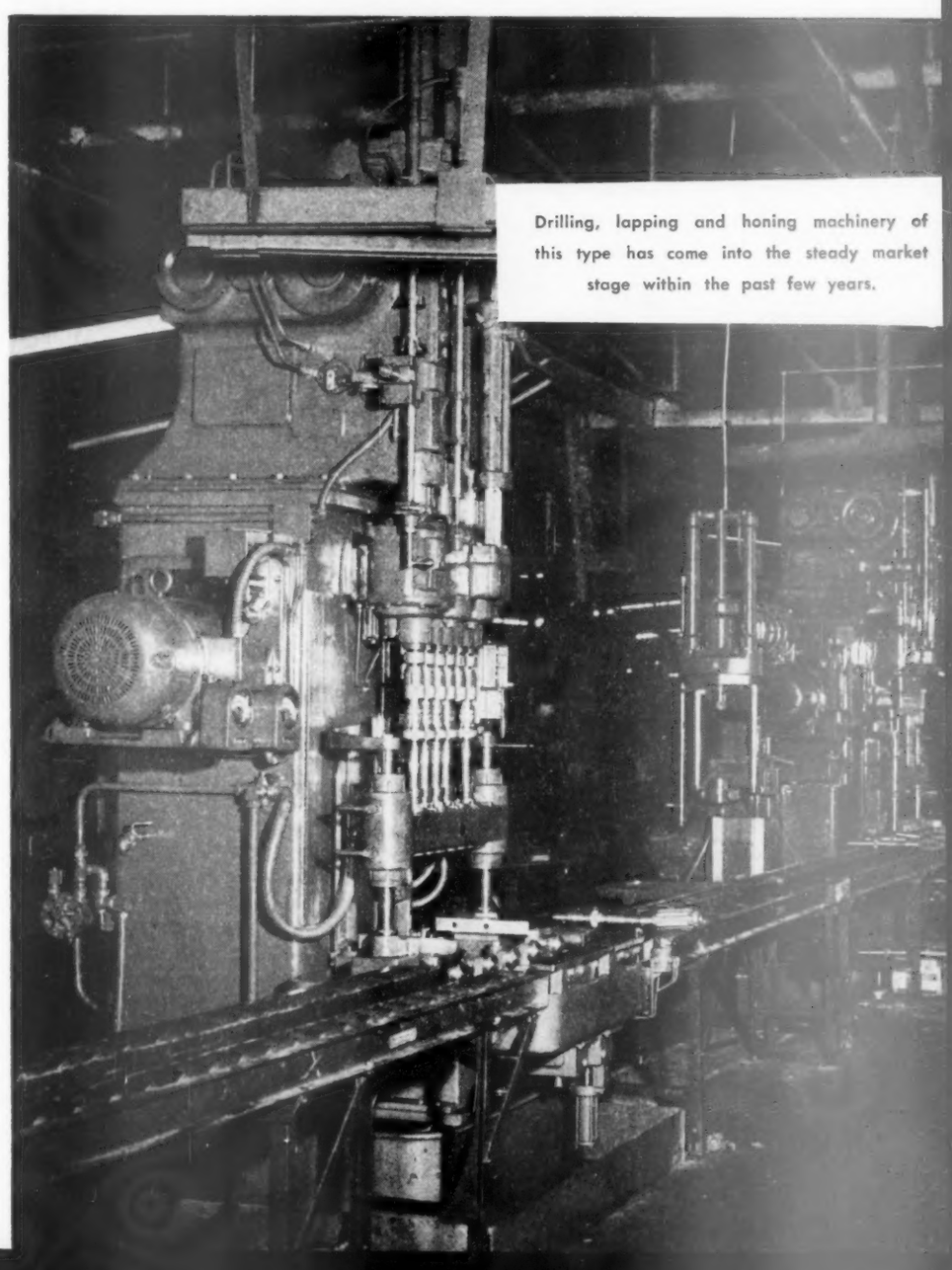
Well shielded equipment — progressive designing makes it possible to take advantage of new developments in cutting oils.

strength of light but carefully formed sections for the brute strength of heavy and solid ones. And the processes moved on into other industries which had the same problems with much larger quantities of less precious metals. When such problems exist the jewelry industry is a good one to watch for their solutions.

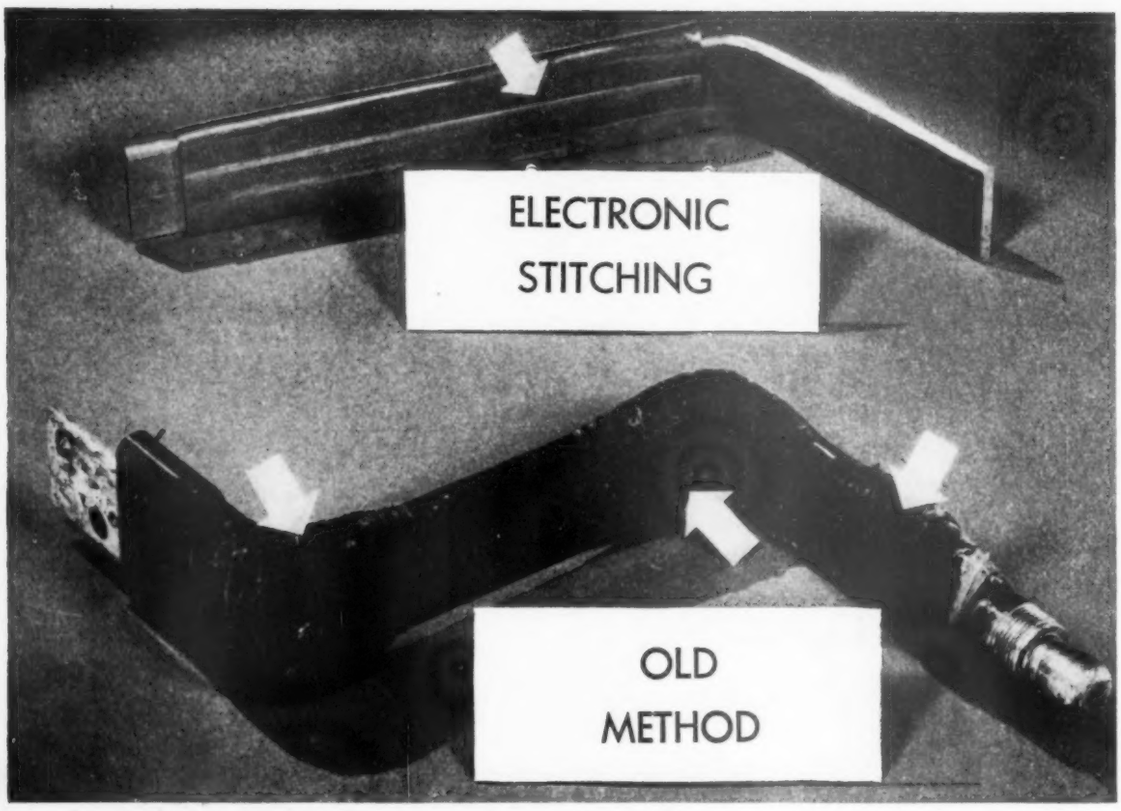
There are some industries which are changing and improving their own products so rapidly that there are immediate acceptance markets for almost anything new which will help them to make any improvements at all. Automobile makers and electrical products manufacturers are among them.

The Case of Belting

The results which some of these companies have had with power transmission belting are examples of how a product which long has been regarded as dying can be very far from dead. Flat belting for power transmission does not have anything like the dominance of the transmission field that it held forty years ago. And yet one of the largest makers of belting has as its biggest customer the world's most progressive automobile maker, and as its second largest an electric motor concern which has been a highly aggressive fighter for direct drives. The answer is that direct or short center drives have gone in when they could overcome disadvantages of belting—and in a few places where mere



Drilling, lapping and honing machinery of this type has come into the steady market stage within the past few years.



Electronic stitching is just emerging from the initial stages of development and acceptance, already tends to make older methods obsolete.

"stylishness" sold them—but have stayed out of places where they could not meet belting's advantages.

The art of designing flat belt drives is well over one hundred years old, but there still are machine designers who have not mastered it. An error made by one group of designers is an example of the risks taken by buyers of machines which still are in the immediate acceptance market stage.

A Problem of Transmission

The belt drive was on the front or control end of an automatic machine, the rear end being the one from which the stock was fed. The pulleys had been laid out to have diameters and crowns highly suitable for the kinds of belt which do not withstand oil very well. But by the very nature of the machine, this belt would be sure to work in an oil fog, might be splashed or even flooded with oil.

No belt was found which would stand up more than a few months, and belt slippings or outright failures came at unexpected moments, resulting in considerable operating trouble.

This machine operated at speeds as much as 40% greater than those of machines it displaced, and with accuracies which would permit some grinding operations to be eliminated from its products. Where its savings justified its use, the problems of its belt drives were a minor although vexatious factor. And the belt drives became a procurement problem—to find the belts which would stand up the longest and give the least trouble, and to work with the belting engineers to make the drive conditions more tolerable for oil resistant belting. Ultimately these belt drive problems were solved. But minor problems are almost to be taken for granted when a machine promises such savings that its purchase is indicated before it has had a thorough seasoning on production lines other than those of its maker.

Prices and Profits

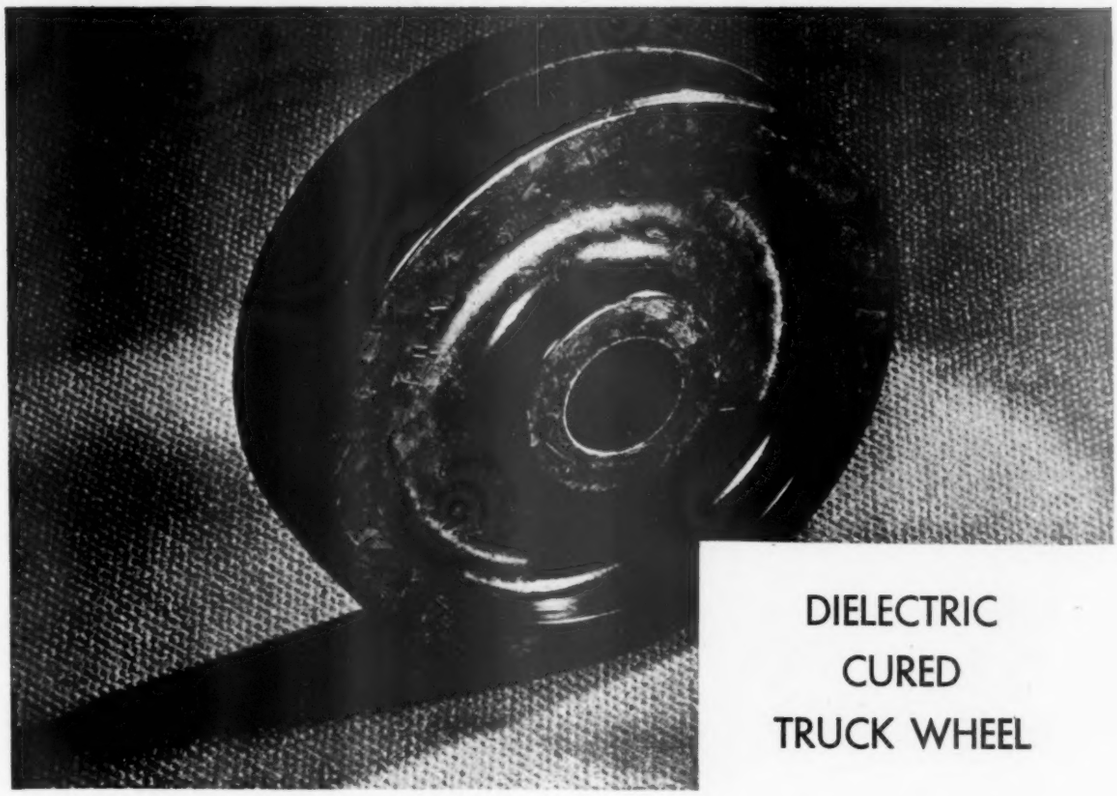
High prices are to be expected of machines which are in their initial acceptance stages. When hydrogen atmosphere brazing and annealing furnaces first were brought out some seventeen years ago, the lowest priced model cost $1750.00. A year later better models of higher capacities were selling for less than $1000.00. But the factories which had the greatest need for such furnaces and had bought that first model had secured such savings with it that it had paid for itself within that first year and also had provided the $1000.00 with which to buy the improved model.

Today it is possible to buy vastly improved models at far less cost per pound of capacity per hour, the furnace is well along in its steady market stage, and companies which never could have profited by the early models are making money with the late ones.

Foresight Pays

The Purchasing Agent of an agricultural equipment manufacturing company keeps a "watch this one" file in which any new and promising raw material, process or kind of equipment is entered. At periods ranging from three months to one year every item listed for watching is investigated. Into the file goes any data found in publications or offered by salesmen which will give evidence of how a file item is progressing.

When the dairy companies were ordered by law to process their wastes rather than dump them into sewers, this company was one of the first to foresee that new casein plastics would result, one of the first to take advantage of the new casein



DIELECTRIC
CURED
TRUCK WHEEL

Dielectric curing of plastics is still in the early stages, promises to be a very useful process.

cements which now are making big advances in the fabrication field. The company was first with precision quenching of metals, with some forms of induction heating, with various phases of gear shaving. Yet the various stages or "ages" of product development have been watched so accurately that almost never has the company paid the worst risk penalties of immediate acceptance product buying.

The Development Cycle

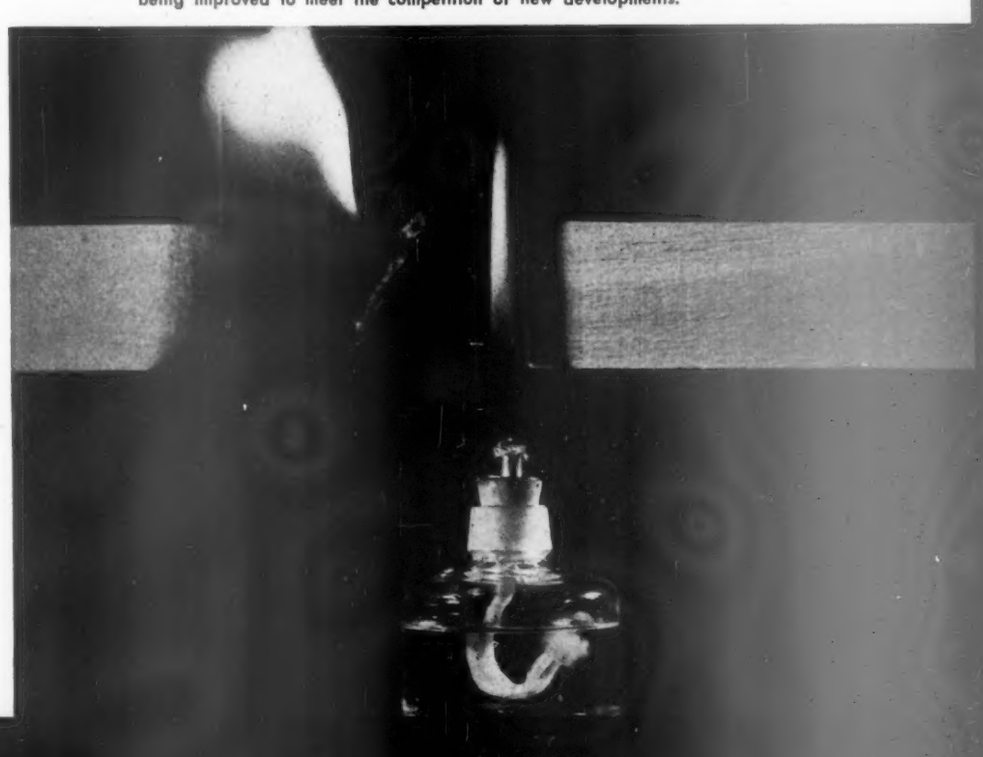
A maker of grinding machines believes that new products are born, enter their infancies, pass through a stage comparable to adolescence, grow middle aged and strong, then go on into failing old age.

It takes at least two years for a new product to go through the company's development department and get into the grinding machines. Therefore the Purchasing Department watches closely for interesting products which might improve the performances or utilities of grinding machines. If possible, these products are caught while in their infancies, the theory being that at that time the company can most easily induce the product makers to so shape the product developments that they will best fit the needs of its grinding machines.

During the two-or-more year period of experimentation and development the new products have time for parallel and extended development in other fields. As a result of this policy the company has a long list of "firsts" in the development and improvement of grinding machines to its credit, yet almost never has it come out with anything that gave unexpected troubles.

The problem of selecting the right "age" or stage of development at which a product should be considered is a difficult one for the procurment division of any company. The technique for solving it consists of vigilance, planned study of the progress of new developments, and heavier emphasis upon the engineering phase of purchasing.

Flame-proofing of wood (sample below) illustrates how old materials are being improved to meet the competition of new developments.



FOLLOW-THROUGH in Purchasing

Here is a closely correlated system of forms, in which complete current data on every purchase is available to all interested departments

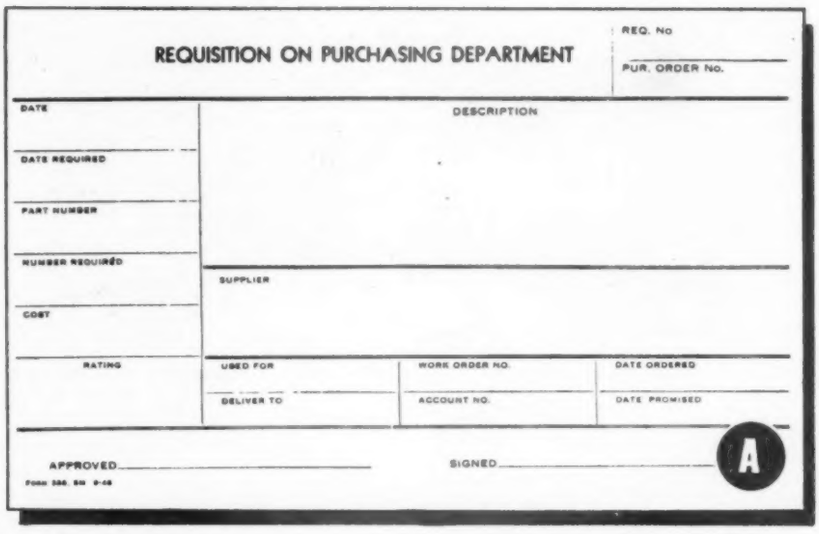
By O. E. SCHULTZ

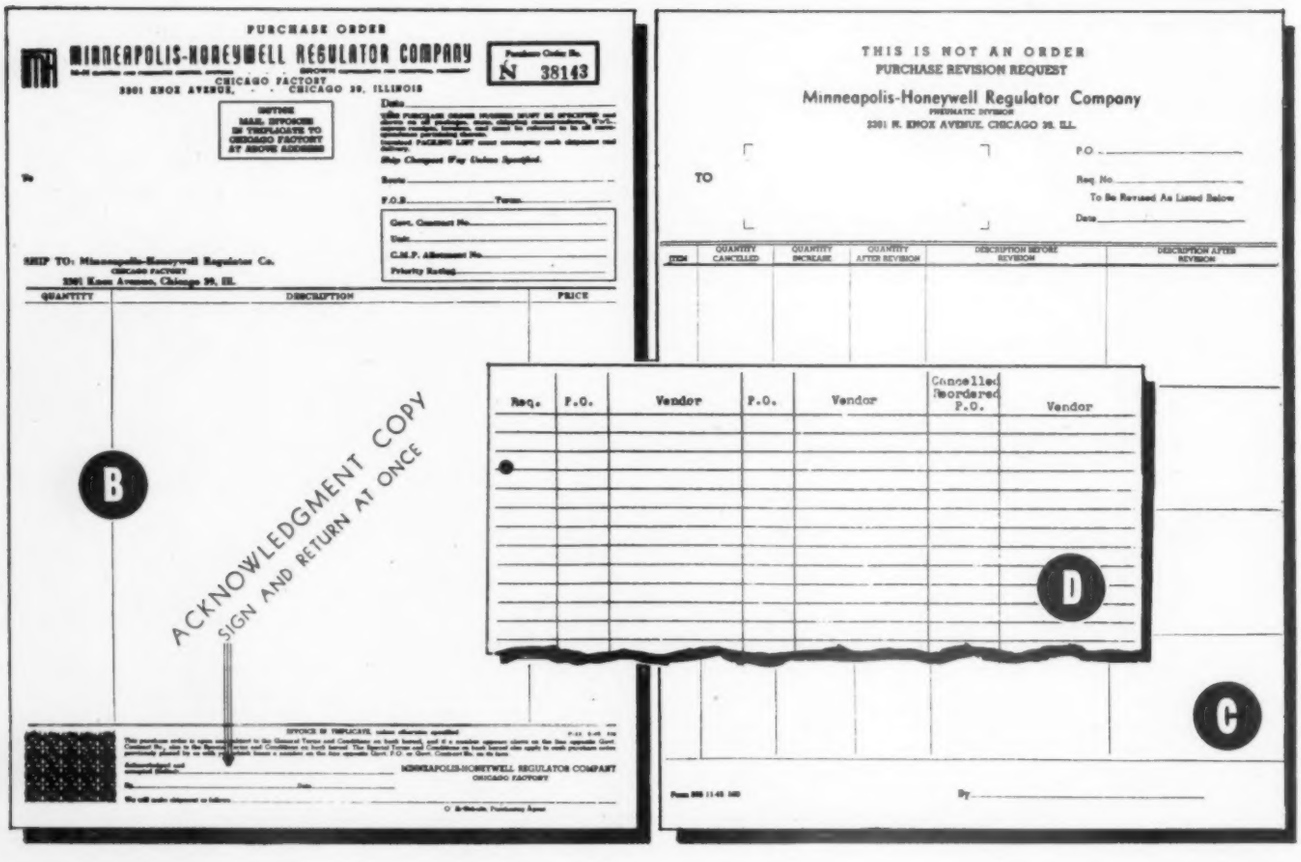
Purchasing Agent
Minneapolis-Honeywell Regulator Co.
Chicago

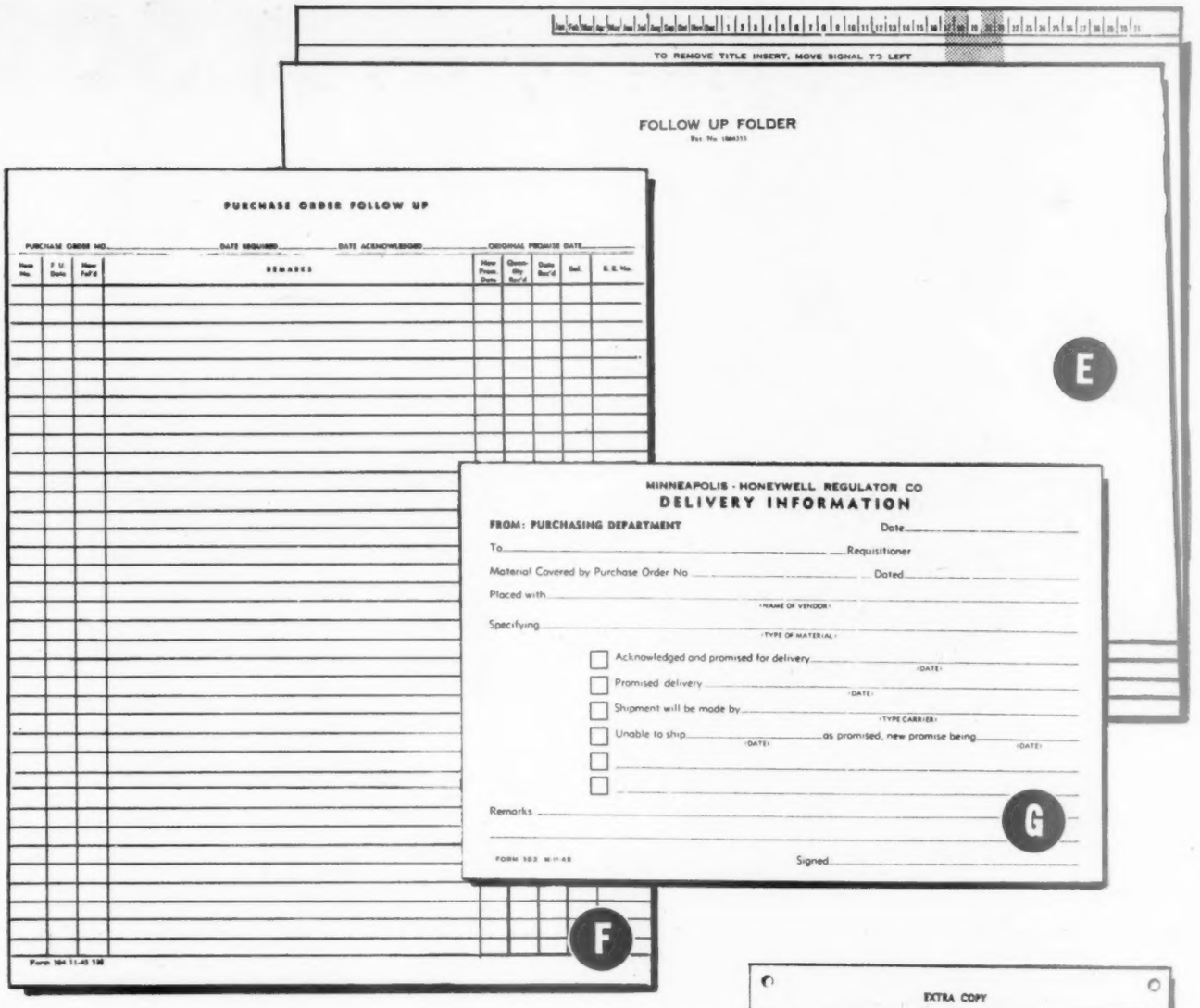
PURCHASING department forms are most effective when the transaction as a whole is kept in mind, rather than the immediate purpose of the form alone.

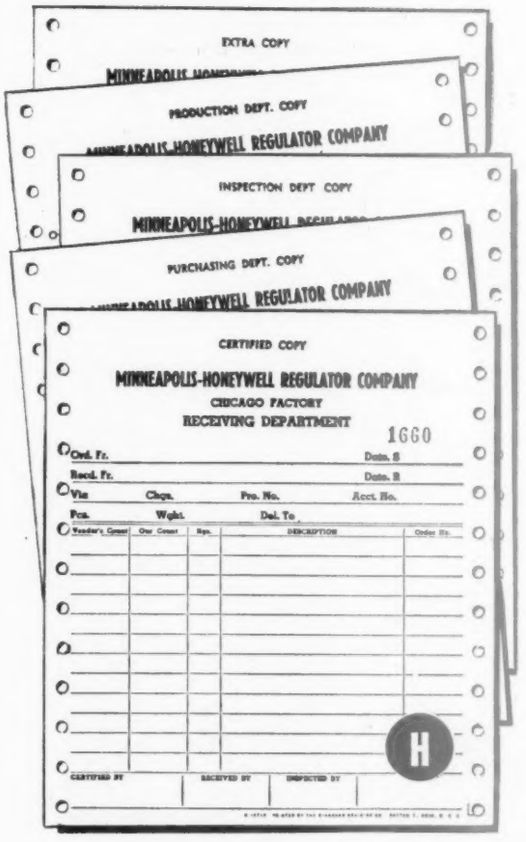
A. This requisition goes beyond the mere description of needed material. It is identified according to the intended use and the specific work order, and correlated with purchase order number and delivery schedule.

B. There is no ambiguity of purpose in this acknowledgement copy of the purchase order, with its bold legend and arrow printed in red, requiring acceptance and delivery promise of the vendor. This is Copy 2 of a six-part form. On office copies, the space at lower left is used to designate the department in which material is to be used.









C. In the event of a change, the original quantity and description are shown side by side with the revised requirement, item by item. Copies are distributed just as in the case of the original order, so that all records will be clear.

D. The order register is tied in with requisition numbers, and shows a reference to cancellations and re-orders, if any.

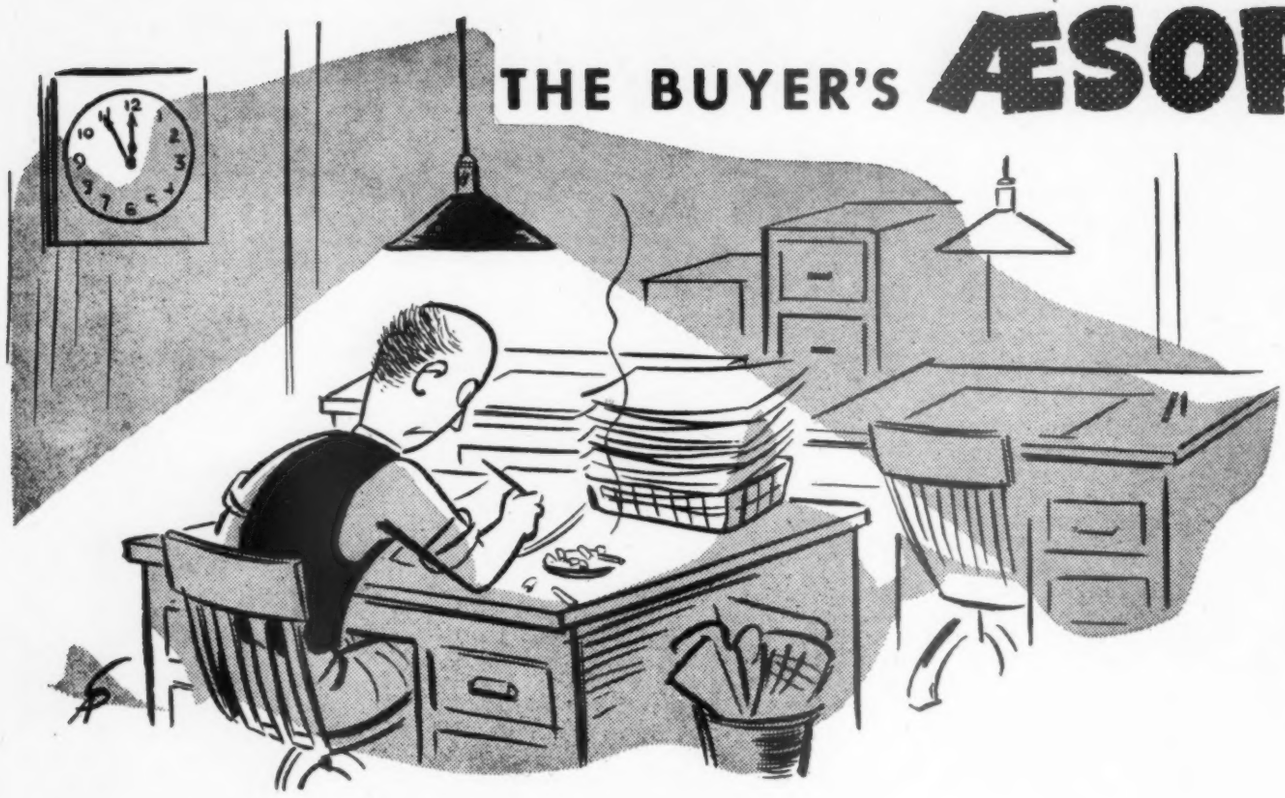
E. Follow-up is scheduled by means of a tickler file. The sturdy folders collate each day's work. The colored signal tab is adjustable along a date scale on the upper edge, with cellophane protective slip.

F. The follow-up record provides space for complete progressive information concerning each item on the order, method and date of expediting action, and latest delivery promise.

G. Original delivery promises and any subsequent changes in the schedule are promptly relayed to shop and planning departments, so that all concerned are continuously informed of the status of goods on order and what delivery may be expected.

H. To avoid any possible delay in putting materials to use the receiving report is made out in five copies. Purchasing, inspection and production departments are promptly informed that materials are available.

THE BUYER'S ÆSOP



THE FABLE OF THE BUYER WITHOUT ANY OUTSIDE INTERESTS

ONCE upon a time there was a little red-haired P.A. named Henry, who was a fool for work and did it all for the greater glory of the R & R Refrigeration Co. One day the director of purchases, a tall, handsome, tweedy fellow, came into the back office and said, "We hafta have some block tin tubing. But fast." He looked around anxiously because he had a golf appointment for three o'clock. "Who will find us some block tin tubing?"

"Not I," said Buyer M, turning back to his racing form.

"Not I," said Buyer N, riffling the dictionary for a six-letter word meaning immature.

"Not I," said Buyer O, and went downstairs for a cup of coffee.

"Then I will," said Henry.

And he did. With much toil and moil and telephoning.

A week passed, and again the d. of p. came into the back office. "Gosh, there'll be hell to pay if we don't lay hands on some bronze bushings pdq," he said ingratiatingly. "Who will check the catalogs and the salesmen and find us some bronze bushings, x-b 298?"

"Not I," said Buyer M.

"Not I," said Buyer N.

"Not I," said Buyer O.

"Then I will," said little red-haired Henry.

And he did. Though three nights straight he didn't get home until twelve, and his wife threatened to divorce him, and meant it.

A week later the d. of p. burst in again. This time he really was in a tizzy. Production was yowling because it needed electric motors, and the d. of p. had a heavy binge planned with some salesmen.

"Who will find us 5000 ½ h.p. electric motors?" he implored.

"Not I," said M, from the depths of his racing form.

"Not I," said N, erasing a letter on his crossword puzzle.

"Not I," said O, and ran to catch the elevator down to the cafeteria.

"Then I will," said Henry.

And he did.

When the refrigeration units started moving off the assembly line, the Big Gun of R & R came in to see the d. of p. "Swell buying job you've done!" said the B. G. enthusiastically. "You deserve a raise Also a vacation in Florida. A paid vacation. And while we're about it, we'd better see what the boys in the back room should have."

"Well, that M now. He's a sharp boy," said the d. of p. "Makes as much money on horses as on purchasing."

"Mark him down for a raise," said the B. G.

"And that N! Man, is he a whizz at crossword puzzles! Never misses a trick, horizontal or vertical!"

"A raise, of course."

"And O certainly deserves a raise," continued the d. of p. "Most astounding capacity for coffee it's ever been my privilege to see!"

"Fine, fine. A raise and a promotion. You can figure out what he should be promoted to."

"Now Henry." The d. of p. scrutinized the smoky ether outside the window. "I don't know about him. Seems to be just a drudge. No outside interests. No——"

"Let's skip him," cut in the B. G. "After all we've got to cut costs somewhere."

So they cut costs. On little red-haired Henry.

Moral: All work and no press-agenting never got anyone anywhere. And/or:

Little red-haired Henry
Will surely die in penury.

THE FOUNDATION OF PURCHASING

A vast amount of preparation and development over many years lies behind the present status of the industrial purchasing profession

Our debt to the pioneers imposes the responsibility of making use of those sound foundations

By FRED G. SPACE

Purchasing Agent
The Seymour Manufacturing Co.
Seymour, Connecticut

HAVE you ever observed the vast amount of preparation necessary to the release of power—that basic element of our industrial civilization, which we so often take for granted? It has been exemplified most dramatically in the all-out dedication of technical skill and the vast expenditure of money, all as a prelude to the release of the Hiroshima bomb. But it is just as true of the less spectacular power sources with which we are familiar in our daily living. Some time ago, General Motors published a booklet called "A Power Primer." Speaking of engines, it said: "An internal combustion engine is fundamentally a container into which we put air and fuel and start them burning." That all sounds very simple, but the internal combustion engine as we know it today is an exceedingly complicated mechanism and has reached its present stage of efficiency only after generations of mechanical reseach and progress.

Infinite preparations are necessary to the erection of a skyscraper or the building of an aircraft carrier. Men never set forth on an important mission or project without a deal of preparation. The launching of a new business enterprise has back of it long and tireless research and effort. Men accept risks because they have faith in their own abilities, confidence in the talents of others, belief in the needs and desires of their fellow men. The farmer plants his grain only after he has prepared the soil, but even in back of that is his confidence in the seasons, the snow and the rain, the sun, and the hidden life in the seed itself.

It is not strange that, in the knowledge of this, we are impatient with those who come forth with an idea and expect it to accomplish their purpose overnight; who, fired by their own enthusiasm, are intolerant of those who do not immediately climb aboard the bandwagon. The crusaders in our midst would announce their program like the flashing of a meteor and expect a waiting public to receive such manifestations as right beyond question. The real work of the world is not done in that manner, and very little of it is spectacular.

A salesman lavishly extols the virtues of his product, and appears puzzled when one counters with the observation that if such products actually did embody all of those qualities it is very stange that they do not monopolize the field. While perfection is a quality that we should always strive for, it rarely if ever exists.

A new buyer joins a purchasing staff. His duties are defined; he learns the ropes and acquits himself with credit. But back of that achievement is more than ability and sincerity of purpose on his part, for he steps into a profession that has long since reached maturity. Its ethics and its principles are established, the guide posts are numerous and the techniques no longer new. Furthermore, the company with which he is identified has its background; its rating and reputation are good, its credit established, and its products have proven themselves. All of these things are not of his own creation, but nevertheless they constitute the foundation or platform upon which he is fortunate enough to stand.

His purchasing policies and decisions are not contingent upon a hunch or the inspiration of the moment. Resources of information are at his command that have been developed over many years. His training for the task will be incomplete, and his measure of accomplishment will be limited, until he recognizes that continuous study and the actual use of all the tools available to him are essential. We are in a cycle where materials and equipment do not come to the buyer; we have a real job of procurement to do. The record of salesmen's calls may reveal a pronounced upward trend in the number of salesmen now coming to see the purchasing agent, but an analysis of such calls indicates that many of them are still confined to the area of the friendly visit or good will cultivation. The war may be over, but government controls still exist; to what degree are we familiar with them? To what extent and how intelligently do we use the facilities offered?

The story is told of three shipwrecked seamen who were being tossed about on the waves in a small boat. Night approached, their position was increasingly perilous, none of them had ever learned to pray. One of them, however, agreed to tackle the job, so he talked with God something like this: "Dear Lord, for twenty years, as you know, I have not kept you awake nights, burning candles or plucking at your sleeve asking favors. If you will help us out of this present scrape, I promise not to bother you again for another twenty years." Honesty of purpose, no doubt—but

(*Continued on page* 326)

CONSUMER GOODS SURPLUSES

Surplus disposal has bogged down for three reasons: the basic law is a political compromise; its objectives are diffuse and contradictory; and its administrative regulations defy efficiency

By HOWARD RAFFERTY

FOR many months the federal government has struggled with the problem of surplus property accumulated during the war years. Headlines scream scandal, war veterans denounce dealers, businessmen condemn the administration, and politicians play football with the whole mess.

The general public is now so confused by all the conflicting publicity circulating that an objective analysis of the whole matter is desperately needed to dispel the fog now beclouding this red hot issue. A review of the situation might be illuminating, even to those who have followed it rather closely.

From its very inception, the surplus property program, especially in the consumer goods end, has lent itself to political action.

In fact, the basic law creating the activity might be termed a politician's law, in view of the many conflicting aims set forth by its authors.

Twenty specific objectives were laid down by Congress, when drafting the preamble to the Surplus Property Act of 1944, and a review of the most pertinent aims is essential if one is to grasp even an elementary understanding of this controversial subject.

Objective No. 1
Help the Veteran

In Section 2(f) of the Act, Congress laid down the premise that surplus property should be disposed of in such a manner as "to afford returning veterans an opportunity to establish themselves as proprietors of agricultural, business, and professional enterprises". This worthy objective has proven to be one of the most difficult to attain, from an administrative point of view.

In the face of thirteen million returning war veterans, each bent on sharing in this great national jackpot, Congress naively ordered that sale of surplus property to federal, state and local tax-supported institutions should take precedence over veterans. And right there is where the fun begins.

In the first place, only a relatively few items in the surplus inventory are rated as "hot". These items are chiefly motor vehicles, tractors, rubber tires, repair parts, storage batteries, and certain types of machinery and textiles. Looking out from the inside, it appears that every second discharged veteran is after one of these critical items.

Having been needled by vote-hungry politicians that their rights to federal surplus property were paramount, veterans are disconcerted and embittered when they find themselves actually holding a number four priority to purchase. No amount of explanation from official sources can reconcile this irrational condition, as the first three priority groups are avidly seeking the very same items of hot merchandise desired by the veterans, and desirable units pass into the hands of federal, state and local agencies long before the veteran can hope to buy.

This, then, is the crux of the veteran's complaint with respect to surplus property disposals.

Objective No. 2
Use Normal Trade Channels

Passing on to Section 2(n) of the law, we find another noble objective is "to utilize normal channels of trade and commerce to the extent consistent with efficient and economic distribution and the promotion of the general objectives of this Act (without discriminating against the establishment of new enterprises)".

Here again we face one of the most contentious issues a public official ever was called upon to wrestle with. Congress has gone on record repeatedly as a stout defender of capitalism, or, to use a more political term, the system of individual enterprise. However sincere the advocates of rugged individualism may be, the brutal fact remains that many (possibly a majority) of the veterans, farmers, and general public, striving to get their hooks into the surplus property jackpot, are bitterly resentful of the effort Congress has made to "utilize normal channels of trade" in disposing of war surpluses.

The general consensus seems to be that, as the property was bought originally with public money, one profit has already accrued to private business; that resale through trade channels instead of direct to consumers allows an unearned profit to merchants.

While the fallacy of this reasoning is evident to reasonable minds, the socialistic trend of government in recent years has provided a foundation on which arguments can be based. Furthermore, the two prominent pressure groups (farmers and veterans) are peculiarly amenable to political influences having a direct bearing on surplus property.

One answer to this would be establishment of retail stores, operated by government, but as yet this step is not in the blueprint stage.

Objective No. 3
Prompt Redistribution

Section 2 (r) of the Act touches upon administrative procedure by directing the War Assets Administration "to dispose of surplus property as promptly as feasible without fostering monopoly or restraint of trade, or unduly disturbing the economy, or encouraging hoarding of such property, and to facilitate prompt redistribution of such property to consumers".

Well, it sounds good. But what happens in actual administration? Three priority groups must be contacted before sale can be made to veterans, and no sales to commercial buyers can be attempted until all four groups have worked the available merchandise over and over. Various methods of display, contact and sale have been developed, but sales still lag and inventories grow.

Congress and the public are puzzled over apparent delays in selling war surplus, while those actually engaged in the project struggle valiantly against administrative bottlenecks. One glaring hurdle in the path of quick sales is the complex sale contract form. Machine accounting records are maintained, and, without going into technicalities, it may be explained that the automatic machine entries as originally made can only be cleared or credited by documentation bearing symbols exactly duplicating original entries. As sale contracts must be prepared by manual typing, the usual percent-

(*Continued on page* 330)

High standards of accuracy are demanded on a production basis today. On this equipment, cylinder sleeve bores are held to .0002 of an inch for parallel and out of round.

BETTER MACHINE TOOLS TO OFFSET LABOR COSTS

Westinghouse Machine Tool Forum stresses the need for greater capacity and greater efficiency in postwar equipment, warns of new problems in obsolescence and surplus

THE need for improved machine tools making for easier operation, closer tolerances, better material holding, greater accuracy and faster production, to offset increasing labor costs and to insure the maintenance of the nation's industrial supremacy, was voiced at the Tenth Annual Machine Tool Electrification Forum sponsored by the Westinghouse Electric Corporation which was held in the William Penn Hotel, Pittsburgh, April 9th and 10th.

More than 232 attendants registered for the Forum, some 113 machine tool manufacturers being represented. Among the subjects discussed by members of the machine tool industry and Westinghouse technicians were surplus machine tools in the hands of the government, future machine tool requirements of industry, and current social conditions as they affect industry, as well as numerous technical papers on equipment and tool design.

It was stated that at least one third of existing machine tools are obsolete and that more than 600,000 machine tools now in the hands of private industry are 15 years old, including thousands of "clunkers" or machines that are more than 35 years of age. Obsolete machines and climbing labor costs, it was pointed out, are the basis of inordinate production costs, and hence the demand of management for new machine tools that would provide greater production at lower costs.

Speakers at luncheon meeting on April 10th were W. P. Kirk president, National Machine Tool Builders Association, Gwilym A. Price, president, Westinghouse Electric Corporation, and A. H. Phelps, vice president in charge of purchasing and traffic, Westinghouse Electric Corporation. In the course of a short address in which he announced a new Westinghouse Policy for the Purchase of Machine Tools, Mr. Phelps said in part:

"Two years ago when we met, many were predicting that the peak was over—enough tools had been built to supply the world for five years, and immediately following the war, real hard times would be the lot of the machine tool manufacturer. Last year, you were not so sure of this. The end of the war was in sight—reconversion was just

around the corner, and the situation looked very much brighter.

"Today we are meeting under very different circumstances. No one here, one year ago, would have predicted a situation in which we find ourselves today. It is a situation which, if I can read the signs in the skies, indicates that your industry will have to redouble its efforts to develop tools that will save labor costs beyond anything you have ever hoped or thought. The demands labor is making and the amount it is necessary to pay the most common sort of laborer, indicate that the only way out is for you to employ every man that you can can find who has an idea which can be embodied in a labor saving machine, tool, or device.

"You must improve your design, the utility of your tool, and everything about it. In other words, the day has come when you must make a tool which is more human than has ever been the case in the past. When you have done this, your market will expand beyond your fondest expectations and you will obsolete nearly 50% of the tools now in use. You have already obsoleted more than 33% of such tools. You will create a market greater than you have ever known in the past, except in war times.

"The vital question that every purchaser of a tool will ask you from here on is, 'Will this tool reduce my labor cost?' If the answer is 'yes', and if it is positive enough, there will be no end to the tools you will be able to sell. Unless the machine tool manufacturers show the way for the cutting of costs in production, prices for consumers and capital use will be so high that the length of our anticipated period of good business may be very much shortened."

Concluding his talk, Mr. Phelps stated that "Westinghouse will put into effect, as soon as practical, a new policy,—namely, the Westinghouse Policy for the Purchase of Machine Tools:

"It shall be the policy of the Westinghouse Electric Corporation to purchase complete with Westinghouse Equipment, small and medium sized machine tools in accordance with our specifications.

"It is further understood that this policy will apply to machine tool manufacturers who are in a position to stock Westinghouse electrical equipment.

"In cases where Westinghouse, due to design or application, requires special electrical equipment, Westinghouse may desire to furnish such electrical equipment, installing same in any one of its several plants."

R. W. Moore, design engineer, Motor Division, Westinghouse Electric Corp., announcing an eight-to-one adjustable speed d-c motor, described two ways of obtaining the speed range. A speed range of eight-to-one by field weakening is possible with a d-c motor embodying a multi-pole, double-field stator with a two-circuit armature, he said. Such a motor, when applied to machine tools, means a reduction in cost as less gearing is required; it assures greater flexibility for the speed range is practically stepless; and it assures greater output as a result of the wider speed range.

B. T. Anderson, electrical engineer, Sundstrand Machine Tool Co., Rockford, Ill., stated that production increases as high as 48% are possible when electronically controlled, adjustable speed motor drives are applied to lathes and milling machines, and described four typical machining operations in which this drive is used.

H. D. Dorfman, A. B. Breaker Engineering Department, Westinghouse Electric Corp., talking on the subject "Disconnect Circuit Breakers for Machine Tool Control", stated that the thermal or thermal-magnetic circuit breaker adequately protects machine tool motors and control elements against damage from short circuit and overloads; in addition, costly production delays are avoided that are caused when a fuse blows and one of the proper size is not readily available for immediate replacement. He stated that there is a series of six circuit breakers in the Westinghouse line that can be used on machine tools. These are available in different frame sizes, pole combinations, current and voltage ratings.

Vibration Control

Rolland C. Griffith, Research Engineer, The Heald Machine Co., Worcester, Mass., spoke on the subject "Elimination of Vibration in Machine Tools". "Chatter marks found on finely finished surfaces," he said, "can be caused by three kinds of vibration: forced, shock, and self-excited. Forced vibrations are initiated by the sources of power such as motors and pumps, unbalanced rotating parts, ball and roller bearings, gears, and any mechanism which transfers energy in uniformly timed impulses. Shock vibrations are the results of acceleration or deceleration of masses, such as the table. Shock also originates externally from passing trains, stamping machines and hammers. Self-excited vibration is present in many metal cutting operations to some degree. Slowly moving tables and slides are often a source of self-excited or relaxation oscillations.

"What is the significance of chatter? The average contour is not changed by chatter and boundary friction has not been found to change appreciably. Dayton's work indicates that initial run-in should be improved by chatter marks. Measurements to an accuracy of one ten-thousandth of an inch are unaffected. However, the appearance is certainly altered, making visual inspection more uncertain. Where surfaces are to be inspected with optical flats, chatter marks are confusing. A ring gage will appear spotted or banded after using a few times, with chatter marks only a few millionths deep. During the war, measuring instruments with an accuracy of five millionths of an inch were used, but chatter marks with a depth of only a few millionths made measurements uncertain. Chattering reduces the life of single point tools, and harder grinding wheels are required on a rough than on a smooth machine."

Tools of Tomorrow

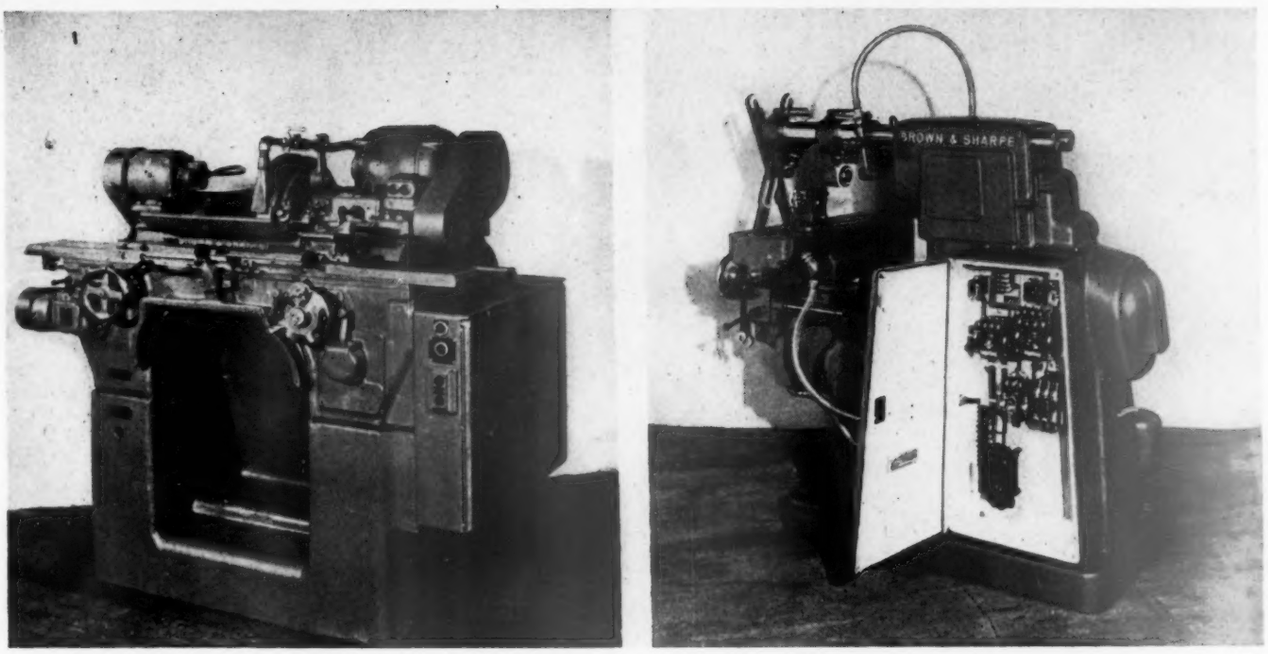
J. R. Weaver, Manager, East Springfield Works, Electric Appliance Division, Westinghouse Electric Corporation, talked on the subject, "A User's Future Requirements for Machine Tools." He said that during the war, production efficiency was about 60% as compared with pre-war standards, due largely to the freezing of machine tools and manufacturing equipment, the introduction of inexperienced help and older people, and the induction of so many young people into the armed services.

Mr. Weaver listed ten factors that should be taken into consideration in the designing and manufacture of new machines, as follows:

Size of Machines: Space will be an important factor in production, and tools should be made as compact as possible.

Ease of Operation: Machines that require operators with the least amount of skill should be made, from a simple drill press to a complicated automatic machine. The inclination in labor to learn a trade is becoming less and less, and the machine tool must supply the skill formerly possessed by the man.

Maintenance: For the same reason maintenance of the machine must be kept to a minimum. Repairs



Electrical equipment enclosures incorporated in design of grinding and milling machines; they are shaped to conform with machine lines, and include oil-tight push buttons and selector switches

should be made in the simplest way.

Electrical Developments: Electricity will continue to play a very important part in the operation of machine tools. Developments might be made in motors or control applications to reduce hand operations even further.

More Accurate Machines: Another feature of increasing importance which should be considered is that better, faster and more accurate means of inspection and measuring work are being developed and perfected. Effort for still more accuracy must not be relaxed. Any reduction in tolerances inevitably results in faster and surer assembly and a better product, and usually results in better overall economy. More accurate manufacturing of parts would cut costs tremendously, save rejects, and produce a more efficient machine. If parts could easily be measured to a millionth of an inch, machine tool builders would be expected to produce machines accurate to a millionth of an inch.

Construction of Machines: It is probable that closer tolerances will require increased attention to stiffer, more rigid construction.

Control of Thermal Expansion: It may be necessary to consider the use of construction materials equivalent to "Invar" with near zero temperature coefficients of expansion to eliminate inaccuracies in operation due to over-heating of machine sections. This would increase available productive hours of a tool by eliminating warming up time and the necessity for resetting tools near the start of the run. It would also reduce scrap losses.

Reducing Set-Up Time: Another desirable objective is to develop features to pre-set cutting tools to give finished tolerances on a piece without so much "cut and try," and to expedite gaging and measuring machines surfaces.

More Special Purpose Tools: There is also the matter of still further development of special purpose tools in place of multi-purpose tools by elimination of adjustments and adaptations not necessary for the specific job.

Dream Tool of Tomorrow: Our engineers are working on new designs which will eventually make today's appliances obsolete. We will need a new type of a machine as much better than today's highly efficient models as the electric light is better than the tallow candle. We must aim toward eventually performing all operations on a piece with one machine. A machine to do this will combine many dissimilar operations and probably be relatively smaller in size and yet be sufficiently flexible to take care of periodic changes in design of product. When necessary to change the hold of a piece to complete the operation, positive and automatic transfer means must be devised.

C. A. Scarlott, manager, engineering publications, Westinghouse Electric Corp., delivered a paper on the subject "Engineering for the Future" which appears in this issue of PURCHASING Magazine.

Price and Surplus

Tell Berna, general manager, National Machine Tool Builders Association, declared that a more simple way must be found for changing a job from one machine to another, stating that many opportunities now confront the machine tool industry though it is handicapped by a shortage of engineers. Commenting upon recent relinquishment of OPA price controls on machine tools, he said that the machines suspended are very large machines and that the supply is limited. He expressed the opinion that another order will be issued that will increase the price on machine tools about 20%, stating that many types of machines have been dropped because they could not be produced under the 1941 ceiling prices.

Mr. Berna also expressed concern over the matter of surplus machine tools in the hands of the government, stating that only a fraction had been released, and that "you will have surplus tools drooling on the market for a long time." He said that the policy of the industry is to cooperate with the government to get the machines into American metal working plants as quickly as possible, stating that "cooperation isn't as easy as it seems," and that it has not been possible to find out how many surplus machines there are.

GOVERNMENT SERVICE for the ASKING

Do you need a report on the market for dentifrices in Nicaragua? The Commerce Department will send it for a nickel

Weekly Business Service Check List is source of valuable business information

AMONG the plans to restore the Department of Commerce to a place in the sun insofar as business is concerned is a Business Service Check List.

The purpose of the check list is to broaden the distribution and use of Department of Commerce published material. All such material — whether in the form of a news release, speech, report, article, or research announcement — is listed and identified so that a prospective reader can request the item by mail, telephone or by wire.

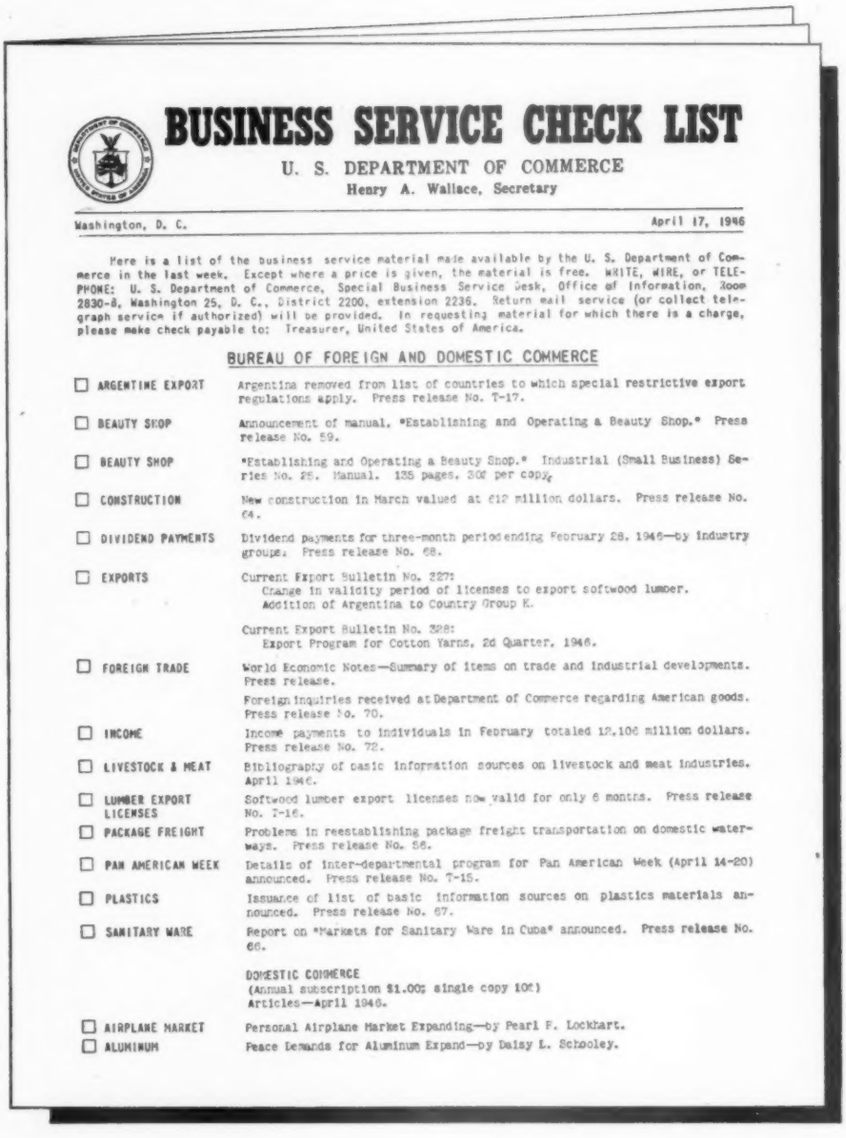
Material requested will be mailed by return mail or, if authorized, will be transmitted by collect telegraph service.

Majority of the material is free of charge, but where a charge is made, the cost is indicated in the Check List, and payment can be made by check.

The plan developed from a procedure used with considerable success by one of the regional offices of the War Production Board, which supplied trade groups and business publications in its area with a full text of all material as received by teletype from Washington. This information was mailed out the same night that it was received, and was delivered on the following morning throughout the region.

A similar technique was used in the inquiry service of the War Production Board and a parallel activity of OPA, both of which organizations have an efficient system of distributing press releases and copies of order to anyone specifically requesting such material.

During the war, and in the reconversion period, the control agencies issued orders and decisions which vitally affected industry and business. The demand for texts and explanations of these actions naturally was limited only by the number of persons directly affected by the orders.



BUSINESS SERVICE CHECK LIST

U. S. DEPARTMENT OF COMMERCE
Henry A. Wallace, Secretary

Washington, D. C. — April 17, 1946

Here is a list of the business service material made available by the U. S. Department of Commerce in the last week. Except where a price is given, the material is free. WRITE, WIRE, or TELEPHONE: U. S. Department of Commerce, Special Business Service Desk, Office of Information, Room 2830-S, Washington 25, D. C., District 2200, extension 2236. Return mail service (or collect telegraph service if authorized) will be provided. In requesting material for which there is a charge, please make check payable to: Treasurer, United States of America.

BUREAU OF FOREIGN AND DOMESTIC COMMERCE

☐ ARGENTINE EXPORT — Argentina removed from list of countries to which special restrictive export regulations apply. Press release No. T-17.

☐ BEAUTY SHOP — Announcement of manual, "Establishing and Operating a Beauty Shop." Press release No. 59.

☐ BEAUTY SHOP — "Establishing and Operating a Beauty Shop." Industrial (Small Business) Series No. 25. Manual. 135 pages. 30¢ per copy.

☐ CONSTRUCTION — New construction in March valued at 612 million dollars. Press release No. 64.

☐ DIVIDEND PAYMENTS — Dividend payments for three-month period ending February 28, 1946—by industry groups. Press release No. 68.

☐ EXPORTS — Current Export Bulletin No. 227:
Change in validity period of licenses to export softwood lumber.
Addition of Argentina to Country Group K.

Current Export Bulletin No. 228:
Export Program for Cotton Yarns, 2d Quarter, 1946.

☐ FOREIGN TRADE — World Economic Notes—Summary of items on trade and industrial developments. Press release.

Foreign inquiries received at Department of Commerce regarding American goods. Press release No. 70.

☐ INCOME — Income payments to individuals in February totaled 12,106 million dollars. Press release No. 72.

☐ LIVESTOCK & MEAT — Bibliography of basic information sources on livestock and meat industries. April 1946.

☐ LUMBER EXPORT LICENSES — Softwood lumber export licenses now valid for only 6 months. Press release No. T-16.

☐ PACKAGE FREIGHT — Problems in reestablishing package freight transportation on domestic waterways. Press release No. 56.

☐ PAN AMERICAN WEEK — Details of inter-departmental program for Pan American Week (April 14-20) announced. Press release No. T-15.

☐ PLASTICS — Issuance of list of basic information sources on plastics materials announced. Press release No. 67.

☐ SANITARY WARE — Report on "Markets for Sanitary Ware in Cuba" announced. Press release No. 66.

DOMESTIC COMMERCE
(Annual subscription $1.00; single copy 10¢)
Articles—April 1946.

☐ AIRPLANE MARKET — Personal Airplane Market Expanding—by Pearl F. Lockhart.
☐ ALUMINUM — Peace Demands for Aluminum Expand—by Daisy L. Schooley.

The question now is whether the demand for material from the Department of Commerce will be as general. The Commerce Department as a service agency is not in the position of issuing orders and rulings by which industry must abide.

The demand for material from the Department of Commerce will be predicated on its intrinsic service value rather than on any coercive force. If the published material is of any direct value, it will have wide readership among those businessmen it affects.

Recognizing this basic difference between the published reports of a service agency as against those of the wartime control agencies, Department officials plan to use the Check List as a guide to demand

(*Continued on page* 324)

NEW TRADE MARK LAW

Trade- mark registration protects the owner primarily as a means of protecting the public from getting a false impression of the product

By LEO T. PARKER

ALL persons are liable in damages who without legal authority handle, use or sell merchandise having thereon an infringing trade-mark. Thus, all purchasing agents should have definite and dependable legal knowledge on this important subject of law.

In this article, therefore, we shall briefly review all late and leading higher court trade-mark litigations designed to assist readers to avoid complicated and expensive law suits. Readers who desire to read complete decisions may refer to citations and obtain the decisions in any good library.

What Is Registration?

It is well known that trade-marks may be registered in the United States Patent Office. However, contrary to the opinion of many readers, the owner of a registered trade-mark may *not* have the right to use it *exclusively* even on merchandise in the same classification.

For illustration, in Western Brewery Company v. Peoples Brewing Company, 149 Fed. (2d) 1019, reported August, 1945, the Western Brewery Company sued the Peoples Brewing Company for infringement of its registered trade-mark. The testimony showed that the Western Brewery Company is the owner of a certificate of trade-mark registration issued by the Commissioner of Patents of the United States on *January 1, 1935,* for the trade-mark "Stag" for beer. This company began to use the trade-mark "Stag" in 1908 and since then sold "Stag" beer in the states of Missouri, Kansas, Arkansas, Oklahoma, Texas, Tennessee, Georgia and many other Southern states.

The Peoples Brewing Company began using in 1938 the same trade-mark "Stag" for beer in certain Northern states including the state of Minnesota. Thus both companies are now using the *same* trade-mark on the *same* classification of merchandise but in different localities and states.

The Western Brewery Company held registration of its trade-mark, in the United State Patent Office, but the higher court refused to hold the Peoples Brewing Company liable for infringement, and said:

". . . . The right to the exclusive use of a trade-mark or trade-name is *limited* to the territory or market wherein it has become established by use in such territory. . . ."

Irrespective of the fact that a seller or company has registered its trade-mark in the United States Patent Office, it has the *exclusive* right *only* to use the trade-mark in territories and states *in which* it sells its merchandise.

Confusing the Public

Notwithstanding this new decision only one person or company may register in the United States Patent Office the same or similar trade-mark for use on merchandise in the same classification.

The chief and important object of the United States Patent Office officials is *disallowance* of trade-marks likely to "confuse" the purchasing public.

For illustration, in Vitab Corporation v. Knox Company, 143 Fed. (2d) 883, it was disclosed that a corporation filed an application in the United States Patent Office to register as a trade-mark the words "Vetab" and "Vitab" on vitamin B complex extracts on bread, brown rice and flour.

The higher court refused to register this trademark in view of the fact that previously the words "Vi-Tabs" had been used on a medicine for invigorating the genital system. Also, the trade-mark "Vitabee' had been used on a preparation to supply vitamin B-1 through injection. The higher court said:

"We are of opinion that the use by the respective parties of their trade-marks would be likely to cause confusion in the trade and deceive purchasers, and that the goods of the parties possess the same descriptive properties."

Different Types of Product

If a new trade-mark will confuse the public, and enable the new user

to profit by publicity of the first user, the trade-mark infringes the former. Otherwise, it is not a case of infringement, and both users may register the trade-marks in the United States Patent Office.

For example, in Goldsmith Bros. v. Atlas Supply Company, 148 Fed. (2d) 1016, reported June, 1945, it was shown that a person named Goldsmith registered a trade-mark "Goldex" for use on "chemicals,

PUT YOURSELF IN THE BUYER'S PLACE

Does a trade-mark

. . . imply that products are similar in use or nature?

. . . give a false impression of the source?

. . . suggest that new products are part of a well established line in a similar classification?

. . . lead to confusion with another producer or place of business?

. . . give the impression of exclusive characteristics that are in fact common to several products?

. . . attempt to capitalize on another's business reputation?

. . . apply in territories where the product is not sold?

medicines, pharmaceutical preparations and toilet preparations". This trade-mark was used by its owner on products comprising pure glycerin and rubbing alcohol which is sold *only* in drug stores.

A company which manufactured and sold an anti-freeze solution for automobile radiators applied for registration of the same trade-mark "Goldex". In other words, the manufacturer of the anti-freeze solution, which comprised a mixture of alcohol and glycerin, applied to register and use the *same* trade-mark being used by Goldsmith on alcohol and glycerin used for a skin rubbing compound.

It is important to know that the higher court allowed registration of the new mark for use on anti-freeze solutions, because use of trade-marks on merchandise in different classifications would *not* confuse the public.

Therefore, it is quite apparent that two sellers may register and use exactly the same trade-mark for use on merchandise in different classifications.

Misleading Implications

On the other hand, see Howe v. Federal, 148 Fed. (2d) 561, reported July, 1945, where it was disclosed that a manufacturer's place of business is in Seattle, Washington. It is engaged in the sale and distribution of cosmetic preparations. For the purpose of inducing the purchase of the cosmetics, the company extensively advertised the trade-name "Hollywood" on its cosmetics.

A suit was filed against the company by the Federal Trade Commission which proved that the company manufactured and sold over twenty products but *only* three are obtained from sources in Hollywood. Also, the testimony showed that the products are not recognized by the Hollywood actresses as being of superior quality.

The Commission held that use of the word "Hollywood" was deceptive and misleading, and constituted unfair practice, and issued an order to cease and desist from using the word "Hollywood" to designate any product which is not in fact manu-

factured in Hollywood, California, or using the words, "Favorite of the Stars". The company appealed to the higher court, which however approved the verdict and said:

"A substantial portion of the purchasing public and persons in the cosmetic trade associated the label with the motion picture colony and thought the cosmetics were manufactured there. The evidence showed also that the preparations in question were not recognized by the actresses of Hollywood as being of superior quality."

However, this court held that the company could legally continue use of the trade-mark "Hollywood" if it inserted after the words "Hollywood" explanations that the term "Hollywood" means only the city of Los Angeles, California, and those adjacent or contiguous independent municipalities. The court said that these explanations would indicate to purchasers that the products were not "Hollywood" products and therefore would avoid confusing the purchasers. However, the higher court refused to allow the company to continue use of the words "Favorite of the Stars", because no testimony was given which proved that actually the product was a favorite among motion picture stars.

Therefore, although two manufacturers may use the identical trade-mark on different kinds of merchandise, no person or seller may without liability use any name or trade-mark likely to confuse purchasers.

Complications Arise

As above explained, two sellers may use the identical trade-marks on merchandise in *different* classifications. However, "complications" are existent in this dependable legal rule.

According to a late higher court decision the protection which the law gives the owner of a trade-mark is *not* confined to the identical goods upon which it is used by the owner, but extends to products which would be *reasonably thought* by the buying public to come from the same source when sold under the same trade-mark.

For example, in Standard Brands, Inc., v. Smidler, 151 Fed. (2d) 34, reported November, 1945, the Standard Brands, which owns the registered trade-mark "V-8" used on canned vegetable juices, sued a man named Smidler for infringement of its trade-mark, and for unfair competition, because Smidler sold *dry vitamin tablets* in packages marked with the symbol "V-8".

The testimony proved that Smidler sells his vitamin tablets *only* to drug stores and pharmaceutical dispensaries. He admitted that when he selected the trade-mark "V-8" for use on his vitamin tablets he knew "V-8" was being used as a trade-mark for use for vegetable juices and he, also, knew that the same trade-mark had already been used on automobile engines, on brushless shaving cream, on an after-shave lotion, and other merchandise.

Smidler contended that he was *not* liable for infringement of the trade-mark of Standard Brands because *juices* and *vitamin* tablets are

in distinctively different classifications. Also he argued that use of the two *identical* trade-marks on different merchandise could not result in confusion of the buying public.

On the other hand, the counsel for Standard Brands proved that its fruit juices have been advertised as being especially desirable because they contain vitamins and minerals.

The higher court considered this argument and held Smidler liable for infringement of the trade-mark V-8, saying:

"Products so closely related in use would naurally be thought to have the same source when they bear the same mark."

Therefore, two identical trade-marks cannot be legally used by two sellers whose merchandise items have similar characteristics.

Protecting Good Will

And again in a recent leading case, the higher court held that corsets, drugs and cosmetics are similar classifications of merchandise.

See Lady Esther v. Lady Esther Corset Shoppe, Inc., 46 N. E. (2d) 165, where it was shown that in 1913 a company was engaged in the cosmetic business in Chicago under the name of "Lady Esther". In 1936 another company began to manufacture corsets, brassieres, underwear, hosiery, pocketbooks, gloves, house dresses and other ladies' wearing apparel and costume jewelry under the name of "Lady Esther Corset Shoppe, Inc." because the owner of the latter company had a daughter named Esther. The cosmetic company filed suit to restrain further use of the name by the corset company, and to recover damages. The higher court held in favor of the cosmetic company and said:

"In the instant case we think it clear that the public might be deceived into thinking there was some connection between the defendant (corset) and the plaintiff (drug) companies. And the good-will of plaintiff, which it had built up at great expense over a period of years, would be whittled away."

Also, see Vickers, Inc., v. Fallon, 48 F. Supp. 221, where the Vickers Corporation sued the Vickers Broach and Gage Company for infringement of a registered trade-mark and for unfair trade practices. The higher court granted an injunction against use of the latter name, and said:

"I am satisfied that the situation is such that if the defendant should produce goods of poor quality the plaintiff would be harmed."

Similar Trade-Marks

The original purpose of trade-mark laws was *not* to protect manufacturers, sellers and owners of trade-marks, but to protect purchasers against deception and confusion. The same law is applicable to trade-names.

For example, in Cain's Lobster House, Inc., v. Cain, 45 N. E. (2d) 397, it was shown that a man named Cain expended several thousand dollars in improving his premises and has done a large business. Cain is engaged in wholesaling and retailing fish, lobsters and oysters. Also, he operates a small restaurant which he named "Cain's Lobster House, Inc.".

A fisherman named Cain, whose home was located ten or fifteen feet away from Cain's premises decided to go into the business of selling

fish, lobsters and oysters. He placed a large sign in front of his home. The sign read: "M. V. Cain, Lobster and Crabmeat."

The original Cain sued the latter and asked the court to grant an injunction against the latter Cain using his own name in his new business. The court granted the injunction and said:

"It has been found that the defendant's sign and the proximity of his place of business to that of the plaintiff have caused confusion to those of the public who purchase goods of the kind offered for sale by the parties."

Recently the Supreme Court of the United States held that any person may use his own name reasonably and honestly for a legitimate purpose in his own business. See Seamans & Benedict, 198 U.S. 118. However, modern courts will compel all persons and firms to use their names in a manner *not* likely to confuse the buying public.

For example, in Horlick's Malted Milk Corporation v. Horlick, 143 Fed. Rep. (2d) 32, the litigation involved the trade-mark "Horlick's" of the Horlick's Malted Milk Corporation. This company in 1915

first registered Horlick's for "prepared milk products, food products containing extract of malt, barley and wheat flour and dry extract of malt."

In 1940 a man named Horlick registered the word "Horlick" as a trade-mark for "dog, cat, horse, and cattle foods". The Horlick's Malted Milk Corporation sued Horlick for trade-mark infringement and unfair competition.

Horlick argued that he was not liable; first, because he had a legal right to use his own name on his own products; and second, the Horlick's Malted Milk Corporation manufactured a product for consumption of persons whereas his product was intended for food for animals.

Notwithstanding this argument, the higher court held that Horlick could not use his own name on his animal food products unless in large and conspicious type he used the words "manufactured by Charles Horlick, Horlicksville, Racine, Wisconsin". Also, in large type the phrase "Charles Horlick" must be printed on face of the package. Thus, the court decided that the buying public could not be confused into believing that the product of Horlick was manufactured and sold by Horlick's Malted Milk Corporation of Racine, Wisconsin.

Other higher court cases on this

subject are Herring-Hall Company v. Hall's Company, 208 U. S. 554; Brown Chemical Company v. Meyer, 139 U. S. 540; L. F. Waterman Company v. Modern Pen Company, 235 U. S. 88.

Many manufacturers have used on their products the name "Vaseline", not knowing that it is a valid trade-mark. However, the higher courts have held all such manufacturers and companies infringers and liable in consequential damages. The reason for these decisions is that "Vaseline" is a registered trade-mark and owned exclusively by the Chesebrough Manufacturing Company.

Thus it is quite apparent that any company which originates and registers a trade-mark may renew the trade-mark indefinitely every eighteen years and prevent *all* competitors from using of the same or remotely similar trade-mark.

Common Names

Modern higher courts consistently hold that no person can appropriate for a trade-mark or trade-name any part of the English language.

In Union House, Inc., v. Hi Ho Oyster House, Inc., 55 N. E. (2d) 942, the higher court refused to agree with a contention that "Union" could be appropriated as a valid trade-mark.

The same rule of law is applicable to all other common, historical and like common names. Also, a trade-mark that is "useful" cannot be registered in the United States Patent Office.

For illustration, in James Heddon's Sons v. Coe, 146 Fed. (2d) 865, reported February, 1945, it was shown that a company filed an application for a trade-mark of a herringbone design for artificial plugs and casting baits which it manufactures and sells to fishermen. The design makes the bait appear to have a skeleton and thus gives it a "fishy" appearance in spite of the fact that it does not resemble any existing fish.

It is interesting to observe that the higher court decided that the trade-mark suggested the bone structure of a fish, and that fishermen considered that the bait was "attractive" to fish. In view of these facts the higher court refused to register the trade-mark, and said:

"The mark served a useful function and was, therefore, not entitled to registration as a trade-mark. . . "

Unfair Competition

Irrespective of infringement of a trade-mark any person, firm or corporation may be guilty and liable for "unfair competition" if the testimony indicates that any part of a trade-mark or trade-name appropriated is *likely* to confuse the public.

For illustration, in Atlas Diesel Engine Corporation v. Atlas Diesel School, 60 F. Supp. 429, reported July, 1945, the Atlas Diesel Engine Corporation sued the Atlas Diesel School, Inc., for injunction relief against using the name "Atlas" or "Atlas Diesel" in connection with any business associated directly or indirectly with internal combustion engines, or in connection with any servicing of such engine.

During the trial testimony was given which proved that the Atlas Diesel Engine Corporation was organized under the laws of the State of New York, and is a subsidiary of Atlas Imperial Diesel Engine Company, which, also, has other subsidiaries in different states.

The business of Atlas Imperial Diesel Engine Company is the manufacturing, selling, repairing, rebuilding and servicing of Diesel engines. The business of Atlas Diesel Engine Corporation and Atlas Engine Company is the selling, repairing and servicing of Diesel engines. The business of Atlas Diesel School, Inc. is training Diesel engine mechanics and Diesel engine operators in the art of servicing, repairing and rebuilding, and operating Diesel engines.

Well Established Usage

Atlas Diesel Engine Company is the direct successor of the Atlas Gas Engine Company and the Imperial Gas Engine Company which companies were in the business of manufacturing and selling internal combustion engines as early as the year 1905. Atlas Imperial Diesel Engine Company and its predecessors have used the trade-mark and trade-name "Atlas" on internal combustion engines. Atlas Imperial Diesel Engine Company was a pioneer in the field of manufacture of Diesel engines, and since some time prior to November 9, 1927, it has engaged almost exclusively in the manufacture, sale, servicing, repairing, and rebuilding of Diesel engines throughout the entire United States of America, its territories and possessions and throughout many foreign countries.

The money spent in advertising by Atlas Imperial Diesel Engine Company, for the past ten years, in sales promotion of its products, exceeded the sum of one million eight hundred thousand dollars ($1,800,000). Its annual sales of Diesel Engines, under trade-mark "Atlas" and parts thereof, for the past ten years amounted to a sum in excess of thirty-one million dollars ($31,000,000), not including accessories sold in connection with the engines.

A number of the officers of Atlas Diesel School testified that they used the name "Atlas Diesel School, Inc.," without any knowledge of Atlas Diesel Engine Corporation's use of the name "Atlas" and "Atlas Diesel". In this respect the court said:

"It is hard to understand how defendant (Atlas Diesel School) and its officers could have embarked in the business of training men to service Diesel engines in the industry without knowledge of the plaintiff (Atlas Diesel Engine Corporation) and their place in that industry and their use of the name 'Atlas' and 'Atlas Diesel'. But, giving to the testimony of defendants' officers full faith and credit, such *innocence* of any intentional wrongdoing cannot serve as a basis for the continued use of the name 'Atlas' and 'Atlas Diesel'. . . "

The higher court held:

"Defendant's (Atlas Diesel School's) use and appropriation of plaintiffs' trade-name 'Atlas Diesel' by the inclusion thereof in defendant's name 'Atlas Diesel School, Inc.,' constitutes an act of unfair competition for which plaintiffs (Atlas Diesel Engine Corporation) are entitled to relief."

POSTWAR PURCHASING POLICIES

Constructive discussions of current buying problems and how to meet them feature Seattle conference program

Reported by W. J. GRANBERG

THE 150 men and women from Washington, Oregon and British Columbia who attended the Tenth Annual Pacific Northwest Purchasing Agents' Conference in Seattle, April 27-28, heard fifteen speakers in three panel discussions which outlined purchasing policies and procedure, reviewed wartime buying experiences, and presented peacetime business prospects in the development of natural resources.

An international flavor was given the conclave by the Canadian delegation which provided five speakers, headlined by R. A. Baker, of Vancouver, B.C., representing Powell River Co. Ltd., and associated companies. Baker, whose companies engage in pulp and paper making and logging and lumbering, was the principal speaker for the panel which discussed "Purchasing Policies and Procedure".

Declaring that the precepts of the National Association are prerequisites of any sound purchasing policy, Baker said:

"We are custodians of a tradition of decency and ethical standards that spurns borderline maneuvering.. Selfishness could have lost us the war," he added, "and if we revert to it, it can lose us the peace."

Baker lamented the rising costs of labor and commodities and said they comprise a snowball that is gaining dangerous momentum. Adding that strikes and wage increases are fewer in Canada, he said Canada will nevertheless feel all inflationary tendencies of the United States.

"Our contribution to world stability", he declared, "should be the calling of a halt to commodity and wage increases."

Discussing the international situation as it pertains to business, Baker said he does not believe war with Russia is likely, much less inevitable, and pointed out "we should overcome our mutual fears and suspicions. There is room for both of us." As for Britain, he said:

"The heart of Great Britain still

Northwestern Conference Chairmen and Association Leaders

Left to right: M. V. McClane, Seattle, General Chairman; Oakley W. Dexter, Seattle, Co-Chairman; K. A. Knudson, Everett, Presiding Chairman; Herbert F. Price, Seattle, President of Washington Association; L. F. C. Kirby, Vancouver, President of the British Columbia Association; Orville K. Buckner, Portland, President of the Oregon Association

R. A. Baker Addresses Conference in Panel Discussion

Left to right at speakers' table: C. W. Anderson, Seattle; E. O. Hammond, Portland; R. A. Baker, Vancouver; Chester Bamberg, Portland; Carl E. Erickson, Spokane

Women Members of Washington Association Attend Conference

Standing, left to right: **Maude Monroe, Frederick & Nelson, Seattle; Ann Gallagher, King County, Seattle; Dorothy F. Brown, Packaging Sales Co., Seattle; Opal V. Wayland, Naval Air Station, Seattle; Eileen Mitchell, Savage Metal Products, Seattle**
Seated, left to right: **Margaret Nyblin, Associated Frozen Food Packers, Seattle; Anita Jordan, General Paint Corp., Seattle; Edith Johnson, Soundview Pulp Co., Everett; Wilma White, Robinson Mfg. Co., Everett; Lenore Wartes, Letchikan Spruce Mills, Seattle**

beats strongly. Any fear of an orgy or experimentation by the Labor government can be dismissed."

Contract Policies

The need for a definite purchasing policy is as great now as during the war, for larger buyer or small, said E. O. Haymond, of the Shell Oil Co., Portland, Ore. Haymond, who discussed contract buying, flayed the practice of shopping for quotations with a low bid as a criterion and said "it should be no part of an ethical policy".

Haymond said the following considerations should form the basis for selection of contractors from whom to ask bids:

1 — Reliability (Can he be depended upon to complete the contract?)

2 — Experience (Does his work indicate he has what you want, can do what you wish?)

3 — Past performance (Is his record good?)

4 — Labor relations (Are they settled enough so that there is no possibility of disputes delaying work?)

5 — Financial responsibility (Can the contractor finance himself through completion of the contract, or will he need help from you?)

6 — Trade relations (Some firms have the policy of awarding contracts only to contractors who use their products (check with your sales department to determine your company's policy.)

Haymond stressed the importance of determining whether a contractor is completely and adequately covered by insurance, such as accident, liability and fire, before a contract is awarded.

Carl E. Erickson, Hughes & Co., Spokane, Wash., who continued the discussion of purchasing policies and procedure, pleaded for markets "free of control of governmental agencies". He said: "Markets have got to be free and open for good buying."

Turning to the future, Erickson said purchasing agents of tomorrow must have a knowledge of the needs of foreign markets as well as those of his own nation if he is to be successful as a buyer. He urged that buyers acquire a knowledge of new products and keep abreast of advances in such fields as plastics. Erickson urged, further, that purchasing agents conduct their business in a clean and orderly manner in order to give added dignity to purchasing.

The peacetime modern scene was touched upon, too, by C. W. Anderson, Crescent Manufacturing Co., Seattle, who said any successful purchasing policy must "be pliable enough to cope with changing conditions."

Speakers conceded the present situation is virtually as distorted and abnormal as was the buying scene during the war, pointing out buying policy must adjust itself to uncertainties in business. Opinion on removal of OPA ceilings was somewhat divided, with some who oppose governmental regulation conceding price control has its good points, but contending that the program was mismanaged in many respects.

The cost-plus practice of buying or letting of contracts was characterized as being nothing more than an escalator method, and agreement was that a fixed-fee basis would result in lower costs than any cost-plus method. Admittedly, however, uncertainty of material and labor costs are causing contractors to shy away from bidding and from accepting contracts at a fixed sum.

Purchasing policies in asking competitive bids was discussed by Chester Bamberg the Hyster Co., Portland, Ore., who told of the considerations that should enter into deciding where to draw the line on seeking offers. He said competitive figures are not necessary on catalog items, nor should they be sought when a small saving would not compensate for the loss of time in calling for bids.

Pointing out that checking of requisitions is the first step in purchasing, Bamberg said four factors enter into placing of an order. They are:

1—Quantity of the order (considering economy, market conditions, inventory)

2—Quality

3—Checking of stocks (to determine if an unknown surplus exists, and in order to prevent waste).

Lessons of Wartime

"What Wartime Purchasing Experience Has Taught the Purchasing Agent" was the panel topic discused by Gordon T. Hanson, of the Stimson Lumber Co., Forest Grove, Ore., who was followed by S. E. Vernon, of Boultbee, Ltd. Vancouver B. C.; J M McCullough, of the Pennsylvania Salt Manufacturing Co, Tacoma, Wash.; A. O. Scott, Canadian Fishing Co., Ltd., Vancouver B. C., and William R. Lindersmith Young Iron Works, Seattle.

Hanson said wartime buying experience is of priceless worth if properly applied, for it taught that research and study in one's particular field of the most modern products available are important if high standards of a firm's products are to be maintained.

"Play safe, and don't speculate," Hanson said. "What with rising prices and market uncertainties, we have to do our own guessing now, even as we did during the war," he added.

The quality of being able to "blow up" at the right time in order to cut red tape and get things done was lauded by Hanson who cautioned, however, that the proper occasion must be chosen for such a "blow up."

As for actual purchasing, Hanson said the theory of spreading one's business is a good one to a certain point, but that it can be carried so far that a company's business would not mean anything to anyone.

"You can't beat honesty and fair

dealing," Hanson said. "And don't forget the producers and manufacturers who helped you secure materials and goods during the war years."

Six points to remember in any buying policy were given by Hanson as follows:

1—Keep up with the times;
2—Know your supplier and his products;
3—Spread your business fairly;
4—Be honest;
5—Beware of red tape;
6—Discount rumors.

Stressing the need for improvement of procurement facilities, McCullough said a purchasing agent must have a successful inventory control system and that three basic factors characterize it:

1—Accuracy;
2—Flexibility (to allow for storing);
3—Simplicity.

"Now is the time to give our house a good spring cleaning," McCullough said, "to get it in shape for peacetime buying on an improved inventory control system."

Problems of Transition

The problems of the transition period between war and peace will be solved only by applied thinking, said Lindersmith, who stresed the point of clear, logical thought in purchasing practice. He said the lesson of applied thinking had been learned during the war by successful purchasers, and cited the three elements which he said are necessary to such thinking:

1—Thought (to think out and analyze a problem);
2—Hard work (to solve the problem);
3—Responsibility (ability to conclude the problem satisfactorily).

In other words, Lindersmith believed that a decent amount of clear thinking will solve for a purchaser any problem that arises during the abnormal present period of uncertain costs, just as it had during the hectic war days, just as it would in normal times.

Scott, who urged active participation in association activities, said purchasers who had applied National Association principles to their business during the war had an easier time of it than those who did not. Scott suggested buyers delegate clerical work to a subordinate whenever posible in order that they may not become bogged it in. He offered the suggestion that buyers who do not have a clerk should secure one if possible in order to free themselves of routine and detail work.

Chairman Knudson Lines Up Conference Speakers

Standing, left to right: **C. R. Ragsdale, Secretary of the Washington Association; J. B. Watson, Vancouver, B. C., Conference Vice Chairman; Harold D. Mitchell, Seattle; Kenneth A. Knudson, Everett, Presiding Chairman of the Conference, Don Tenney, Portland**
Seated, left to right: **Gordon Hanson, Forest Grove, Oregon; Luke Saunders, Vancouver, Wash.; F. G. Davies, Vancouver, B. C.; R. T. Baker, Vancouver, B. C.**

The concluding panel of the conference was based on the topic, "Postwar Development of Pacific Northwest Resources," a subject which brought to light the fact of population, income and job opportunity increases in that area.

Opening the discusion as principal speaker was Harold D. Mitchell, Seattle, the Housing Authority of King County. He confined himself to a review of the growth of Washington since 1940. Mitchell said that by 1945 the state's population had increased from 1,736,000 in 1940 to 2,177,000, while the number of jobs had jumped from 608,000 to 921,000.

Giving June 1945 as the point of 100% employment, Mitchell said the figure for 1939 was 38%, that it was 54% of peak last December, and by August of this year would be 60% of the wartime peak. His figures were for manufacturing alone. With an estimated labor force in Washington of 829,000, Mitchell said expectations are that the job supply estimate of 901,000 in the state will be reached before 1950. Mitchell gave the job source breakdown in Washington to be as follows:

Manufacturing, 21.6%; service, 22%; trade, 19.1%; farming, fishing and mining, 15.5%; transportation, 8.5%; building, 6.2%; government, 5.8%; all others, 1.3%. Greatest single industry in Washington, the one that forms and shapes its economy, is lumbering and manufacture of forest products, while farming and fruit growing are next. The frozen food industry is becoming increasingly important, he added.

Prior to the war, Washington's tourist business amounted to $75,000,000 yearly, with expectations that figure will reach $200,000,000 by 1947, Mitchell said. That the increase in population and industry in the Pacific Northwest will be reflected in purchasing to meet greater demands both locally and or export was conceded by purchasers.

Don Tenney, Crown Zellerbach Corporation, Portland, Ore., said expansion in the following fields will mean greater opportunity in the Pacific Northwest: Lumbering and forest products, frozen foods, agriculture, irrigation, hydro-electric power, bonded plywood, and the utilization of paper and pulp mill waste.

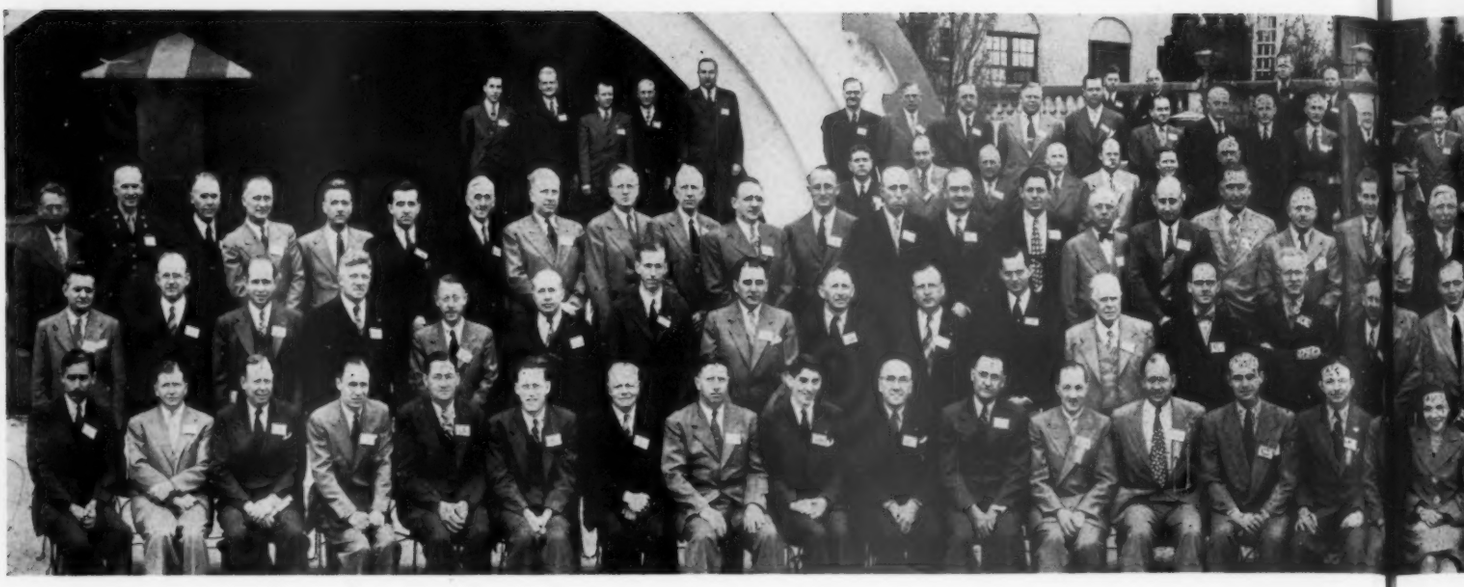
Outlook for Future

F. G. Davies, of the Sorg Pulp Co., Ltd., Vancouver, B. C., who said the future's security depends upon security of natural resources, added that employer and employee must work together. Along that line Davies lamented rising costs of labor and said wage demands are setting in motion a chain of circumstances working toward rising operating costs that will continue upward until the economic structure crashes again, as it did in 1929.

Forecasting expanding population and markets, Luke A. Saunders, Aluminum Company of America, Vancouver, Wash., said those factors, as well as cheap power (from Bonneville and Coulee dams), influenced Alcoa to establish itself in Washington. He said the company, having found a cheap and plentiful source of ore in southeastern Alaska, expects to continue the manufacture of aluminum, along with by-products, at its Vancouver plant.

Purchasing agents, who left the

(*Continued on page* 308)



SILVER ANNIVERSARY

The business of higher education, with 1,800,000 students to care for next September, is 40% bigger than before the war, and presents urgent problems of housing, equipment, and supplies. Yet it will fall short of meeting the total demand, with an additional 500,000 clamoring for admission. Purchasing men in this field have a gigantic procurement program, involving all the problems of industrial buying, plus special problems of their own.

President Frank Martineau
"An amazing amount of procurement know-how is available"

E.B.A. members pay tribute to the past, face buying problems of the present and confidently prepare for the future

Outstanding program at Chicago meeting

THE surplus property situation so far as educational institutions are concerned, is practically SNAFU; the next few months may be the most hectic in the history of buying and selling; the membership of the Educational Buyers Association is now 524; various of the membership are in the market for from 700 to 1000 single pedestal student desks but can't find them; members of the E&I are warned to be more tactful in their contacts with sources of supply; and W. J. Morse is resigning as Purchasing Agent for the University of Harvard.

The foregoing cites a few of the interesting news bits developed at the Silver Anniversary convention of the Educational Buyers Association held at Chicago May 1 to 4, inclusive. It was an outstanding, highly successful meeting with an excellent program dedicated to the theme of "What's New," and marked by an unusually large attendance.

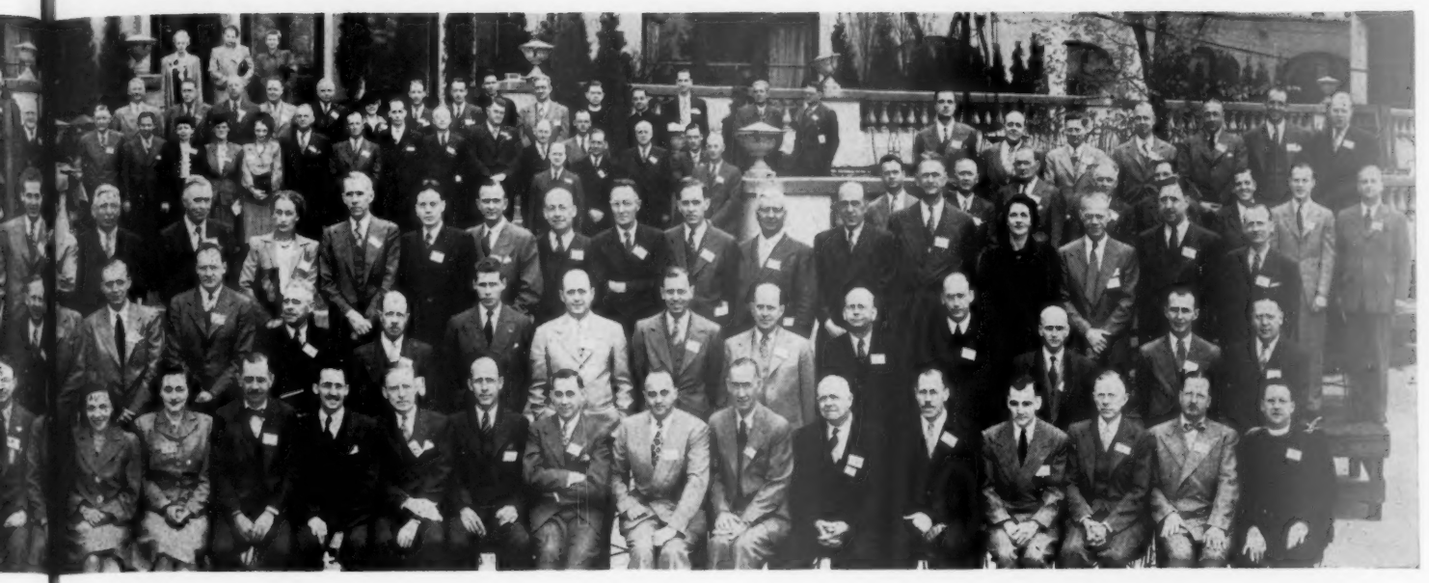
Approximately 300 were registered for the meeting, these representing 187 different institutions, large and small, and the business sessions in the Michigan Room of the Edgewater Beach, were marked by full attendance by an attentive audience, attesting the high caliber of the program that had been prepared.

James J. Ritterskamp, Jr., Purchasing Agent, Washington University, was formally inducted into office as president of the association for the 1946-47 term, at the annual banquet on the evening of May 3rd. Other new officers are as follows:

Vice Presidents: Gerald D. Henderson, Business Manager, Vanderbilt University; Charles Hoff, Financial Secretary, University of Omaha; H. B. Bentsen, Business Manager, George Williams College.

Treasurer, Edward K. Taylor, Business Manager, Cornell University Medical College.

Bert C. Ahrens, 15 Astor Place,



CONVENTION OF EDUCATIONAL BUYERS

New York City, is Executive Secretary of the Association.

The regular business sessions were preceded by executive committee meetings on April 30th and on May 1st. On the 1st, Vice President Charles Hoff, Financial Secretary, University of Omaha, presided over a conference of the leaders of the Regional Associations, on Plans and Policy. This meeting was followed by a conference of business officers, Roy W. Elliott, Comptroller, University of Wichita, presiding, at which Dr. Francis J. Brown, Staff Associate, American Council on Education, discussed the subject "Housing for the Vettran Student," and Robert B. Stewart, Vice President and Controller, Purdue University, talked on "Business Relations with the Veteran's Administration."

Warm-Up Party

The dinner meeting on the evening of May 13th, termed a "Warm-Up" party, with J. F. Knight, Assistant Business Manager, University of Illinois, as toastmaster, was a truly delightful affair. The feature speaker was Thurman Sensing, Research Director, Southern States Industrial Council, an old favorite at E.B.A. gatherings, who pleasantly entertained the audience with humor and quaint philosophies under the subject "What's New in Red Tape", and concluded his hour with the opinion that the best personal asset that one could have in these troubled days is a good sense of humor.

Mr. Sensing's talk was preceded by a bit of raillery involving George Mew of Emery University; Del Rhind, Massachusetts Institute of Technology; John Pond, University of Chicago; Bill Morse, Harvard University upon whom an honorary degree was conferred for a "talk" on "Steam Heat versus Co-Education"; Bob Jenkins, University of New York who was voted the "EBA Pin-Up Boy" for 1946; and Jim Ritterskamp, president-elect. As indicated by the informality in this paragraph, the "Warm-Up" party was an excellent demonstration of the camaraderie that distinguishes this association group.

Members of the Rocky Mountain Group at the convention. They will hold their August meeting at the Science Camp of the University of Wyoming, at Laramie.

President Francis G. Martineau, Purchasing Agent, Brown University, called the business sessions to order on the morning of May 2nd, at 9:35. Following invocation and "greetings" from a representative of the Chicago Association of Commerce, he presented the "Report of the President" in the course of which he paid tribute to the cooperative spirit that marked the activities of officers and members, and especially commented upon the untiring efforts of the association's Surplus Property Committee; reviewed the value of the group meetings, and stated that the association now has a membership of 524. In the course of his report President Martineau said that he believed that the time had come for educational buyers to recognize the fact that there is room for self-development, that an amazing amount of procurement know-how is available "of which I am exceedingly vague," and urged members to capitalize upon the leadership of the N.A.P.A. Upon the conclusion of his report Mr. Martineau introduced Secretary-Treasurer George Renard of the National Association.

Renard Charts Postwar Course

Mr. Renard launched the convention theme with an excellent talk on "What's New in Purchasing". He complimented the E. B. A. body upon its constructive policies and leadership, stating that men in institutional purchasing and in industrial purchasing have much in common, and that never before has purchasing had such standing and recognition as it has today. "Our associations are the result of service and leadership," he said. "We need unselfish leadership and service, and if we do not get it, we will suffer the consequences. It is only natural that after the past few years, we face a period of consequences such as we have never faced before. And the educational buyers group now has before it the greatest opportunty for leadership and service in its history.

"The hottest postwar tip I have seen is—Keep your nerve up, keep your eyes open, keep your expenses down. Many companies made money during the depression. Profitable purchases and sales were made. If we concentrate on making purchases and sales profitable three, six, or nine months from now, that will probably be very successful postwar planning. And there will be enough enigmas, mysteries and riddles to keep us occupied in our spare time."

Comparing procurement with salesmanship, he said that the ten commandments of salesmanship cover the fundamentals of modern purchasing. These include such factors as knowing your own organization, how to serve it, knowledge of markets, keeping promises, placing orders to your company's advantage, being careful, being honest, and watching your conduct and your health. He also emphasized that purchasing agents should keep abreast of new developments in materials and processes.

"Much of our miracle of war production was a logistics job," he continued. "It takes skillful scheduling and logical reasoning to get production materials and repair, maintenance and operating supplies, as wanted, when wanted, and at prices which keep our organization solvent.

"Purchasing is now a Logistics Problem to secure materials needed for operations, rather than speculating on inventories. The chances are we will not have the wide swing in prices we formerly did. Much of the cost in labor, taxes, etc., will be fixed and rigid. The newer and younger men must be aware of that trend. They must realize that the cost of carrying speculative inventories is nearly always prohibitive. We may hear that prices may advance 5 to 10%. How long can you carry materials for any such cost?

In the Air Corp, pilots are briefed before going on a mission: an accurate summary of the mission is presented, and the hazards to be expected are explained. An alternate course and intermediate landing fields are charted when possible, just in case plans go wrong. I believe men in purchasing must do just that. We know the course to follow, and we know there are difficulties ahead. So, we must have an alternate course and landing field selected.

"Brief yourself regularly; be sure to have an alternate landing field. Keep your supply lines open, and keep your eye on escalator clauses, bearing in mind that sellers are not entitled to a blank check. Remember that sound management does not want you to come to it for de-

On the Lighter Side

Thurman Sensing's informal philosophy entertains the delegates at Warm-Up Party. Bill Morse acquires an honorary degree. President-elect Jim Ritterskamp displays his cabbage "Oscar" and Bab Jenkins poses as the pin-up boy.

cisions—it wants you to come to it with decisions. That is your opportunity. Don't flunk it."

The next speaker was Leslie F. Robbins, Purchasing Agent, University of Colorado, whose excellent paper on "Your Purchasing Department through a Fluoroscope", pointing out that in evaluating purchasing department performance, numerous pertinent intangibles aside from the dollar and cents factor must be considered, appears in this issue of PURCHASING Magazine.

The discussion period of the session was led by Robert B. Jenkins, Professor of Marketing and formerly Purchasing Agent of New York University. Comment was made that it is difficult to measure the value of such factors as supplier goodwill, better anticipation of needs, prompt handling of claims, etc., or the factor of cooperation within an institution. Likewise, while purchasing agents do not want an appraisal based on mechanical factors such as number of requisitions handled, purchase orders written, costs, etc., it is as difficult to measure the value of their creative work as it is to measure the value of the creative work of engineering and design departments.

Audio-Visual Aids

Gerald D. Henderson, business Manager, Vanderbilt University, presided at the Thursday afternoon sessions. This session was featured by two interesting papers, one on "What's New in Visual Education" by O. H. Coelln, executive secretary of the Visual Equipment Manufacturers Council, and another by Dr. J. S. Long, Director of Research, Devoe and Raynolds Company, on "What's New in Protective Coatings", an abstract of which appears in this issue of PURCHASING. Foster J. Cole, purchasing Agent, Miami University, was discussion leader.

Mr. Coelln stated that "tomorrow's" projectors would be lighter and more effective, incorporating the more modern factors in optics, sound and mechanism. At the same time, he emphasized the need for improved service and maintenance facilities. He said that when television is available it will bring the "same pictures and the same sound" but that radio is far less promising than the sound projector and that television will only serve to supplement projector-audio-vision equipment.

He stated that in making a choice between the different types of projectors available, it should be made on the basis of fundamental performances rather than special features, the main points to consider being the mechanisms of reproduction and projection which of course involves naturalness of tone.

In response to a question on the standardization of equipment he recommended the use of 16mm projector for both auditorium and class rooms, stating that the 1000 watt unit is considered satisfactory for auditorium use. In connection with such utilization he mentioned the use of portable stands.

In response to a question as to whether it would be better to stick to one type of machine rather than to have several different types, he said that standardization on one make would simplify the service problem, stating that parts and special features are less likely to be interchangeable between different makes, though lamps are pretty well interchangeable between all makes with possibly one exception. "The better thing to do," he said, "is to buy a single make and have parts interchangeable with service close at hand." He warned against school mechanics doing repair and maintenance work unless it is of simple nature, stating that service problems can be easily multiplied by amateur repair men.

Naturalness of sound, he said, usually depends upon conditions that exist in a room where a machine is being used, and that if proper acoustics feature a room modern speakers will function satisfactorily. "It is more likely to be the room than the equipment which

E. B. A. Officers 1946-1947

Standing: **Charles Hoff, University of Omaha; E. K. Taylor, Cornell University Medical Center; H. B. Bentsen, George Williams College; Gerald D. Henderson, Vanderbilt University.** ***Seated:*** **J. J. Ritterskamp, Jr., Washington University; Bert C. Ahrens, Executive Secretary; F. G. Martineau, Brown University.**

Leaders in Panel Discussion

Martineau (Brown); Morse (Harvard); Mew (Emory); Frank (Cornell)

Henry Abbett of Purdue reports on Surplus Property

E. K. Taylor answers questions at forum session

is at fault if sound is not satisfactory," he explained.

Speaking of the availability of war equipment, Mr. Coelln said that the best equipment will be retained by the Army and the Navy for training programs, veteran programs and use abroad. If any equipment does come back, Washington has first claim to it, and UNRRA may lay claim to any equipment or surplus that is available.

The next speaker was Dr. J. S. Long. His paper was unusually comprehensive, dealing with the new scientific development of coating materials based on alkyd resins, which offer the advantage of better color, greater uniformity, longer life, negligible tendency to yellow, and other qualities, and their merits for use on wood, metal, masonry, and concrete. The alkyd coating materials are more expensive than the orthodox coating materials.

Building Contracts

At the Friday morning meeting presided over by Vice President Charles Hoff, the subject of "Awarding Contracts for New Construction and For Capital Equipment" was presented by E. Todd Wheeler, Associate Architect, University of Illinois and Director of Planning, Medical Center Commsision; and Carl M. F. Peterson, Superintendent of Buildings and Power, Massachusetts Institute of Technology gave a talk on "What's New In Construction Materials." These talks were followed by a discussion of the "College Store as a Buying Agency" by Russell Reynolds, executive secretary of the National Association of College Stores.

Mr. Wheeler stated that construction contracts should be kept as simple as possible, declaring that there is no reason why terms and specifications should not be simple and to the point. "All terms should be clearly understood by both parties," he said, "and there is no place in construction contracts for the old theory of *caveat emptor*. Wording, drawings and specifications must be complete." He defined "open specifications" as merely stating what is needed, and "closed specifications" as those which specifically indicate what is wanted, number and kind. In this connection he suggested that the word "approved" be used in connection with the well known "or equal" clause.

Mr. Wheeler stated that one of the principal causes of grief in construction appears in charges for extra work. He said that if the owner changes his mind he must be prepared to pay for the change. If the architect makes an error the owner must bear the cost, as the owner is the one who contracts with the builder and the owner is responsible for such errors. Costs which result from errors on the part of the contractor must be borne by the contractor.

He emphasized that arbitration clauses should be left out of contracts, and were unnecessary if contracts were definitely clear as to what each party is responsible for. In concluding his talk he said that each college and university is in the midst of a period of physical growth and that plans should be made now "for the future growth you are certain to experience."

College Stores

Speaking on the subject "The College Store as a Buying Agency," Russell Reynolds declared that one of the difficulties of college stores is that they tend to build up inventories with materials that do not move, due to poor management, and that in many instances college stores are more or less working in the "dark ages." The real problem, he said, is one of income for managers, stating that this is the reason for inefficient management which is the cause of money losses and inadequate service. He declared that it is impossible to successfully operate a store under absentee managership.

"The question is not whether you can afford to pay enough money," he said. "You have to pay an ample salary or it will cost you proportionately more in lost profits. Nor can you escape the costs of operation, for it costs money to distribute merchandise." The only difference between "trade books" and "text books" he said is that the former are subject to 40% discount and the latter are subject to 20% discount.

Commenting upon store managership he said, "We must get over the idea that only a Harvard man, for instance, can operate a Harvard store," and suggested that managers should be given an incentive for taking more interest in the success of their operations, such as possible promotion to responsible positions in the purchasing department, thus making men feel that the store opens the way to better positions.

Construction Materials

Carl Peterson, whose subject was "What's New in Construction Materials," exhibited samples of a number of new materials that had recently come to his attention, such as cellulosic insulating materials, small Indiana limestone units which he felt would make good partition materials, metal raceways with wires and outlets which cost about $1.00 a linear foot and simplify the matter of providing ample wiring to take care of today's current demands, Transite celotex which he felt suited for temporary partitions, and several types of plywood.

Commenting upon the investment value of storm window installations, he said that the savings made during the heating period, exclusive of labor cost, would approximate a 54% return on the investment—"still it is hard," he said, "to convince people they should use storm windows." Roof insulation makes for a 16% return on investment, and wall insulation about 11%. He also explained the technical factors and values of aluminum foil as a structural insulation, illustrating his talk with charts and graphs.

John Jenkins, St. Louis University, and Henry B. Abbott of Purdue University, served as moderators during the discussion period.

At the general session following luncheon, presided over by E. K. Taylor, Business Manager, Cornell University Medical College, D. F. Watson, Purchasing Agent, University of Chicago and president of the E&I, or, Educational and Institutional Cooperative Service, reported on "What's New in Our Cooperative." Among other things he suggested that buyers should be more tactful in their dealings with dealers and sources of supply.

Mr. Watson introduced W. S. Price, Major in the Quartermaster Department, who has been released from the armed services, and returned to resume his former post as manager of the E. & I. Cooperative Service, with Mrs. Ella Carson who has been conducting the office while he was in England and various European countries, as assistant manager. Mr. Price announced that a stainless steel fabrication service for kitchens and cafeterias was a new feature of the E&I activities.

Mr. Watson's report was followed by a question-box period, with Messrs. Martineau, Morse, Mew and Frank on an answer panel. In the course of the discussions it was brought out that members are experiencing considerable difficulty because of the shortage of dormitory furniture, desks and other types of equipment. It was brought out that several members are seeking from 700 to 1000 single pedestal desks each. In connection with the statement by a member that Army and Navy warehouses are filled with desks, raising the question as to "Where they are and how to get them," some possible sources were suggested which might be able to take care of a few small orders. It was also intimated that Red Cross organizations might be a source of supply at satisfactory prices. In the course of comments on the need for pre-fabricated homes, several members spoke of small units 20′ x 8′, made of 24 gage sheet aluminum on steel frame, with plywood floor and insulating board lining, three of which would make a temporarily satisfactory one-bedroom home. The units are 85% salvagable. The cost of a completed one-bedroom house was placed at about $2,000.

The next scheduled feature was the social hour, followed by the annual banquet with President Francis G. Martineau presiding. Dr. Henry T. Heald, president, Illinois Institute of Technology talked on "This Business of Education," and new officers for the 1946-47 term were installed. In a brief talk President-Elect James J. Ritterskamp, Jr., paid tribute to the successful administration of his predecessor, stating, "Frank has done a real job for E. B. A., and the large attendance at this convention is testimony to the excellence of his administration" and saying that he could not offer much other than to carry on the excellent work of those who had preceded him.

Surplus Property SNAFU

Having been duly inaugurated the previous evening, President James J. Ritterskamp, Jr., presided over the Saturday morning meeting. The subject under discussion was the complex and perplexing problem of acquiring government wartime surpluses. The discussion was ably engineered by Henry B. Abbett, Purchasing Agent, Purdue University, chairman of the E. B. A. Surplus Property Committee, with the aid of a panel consisting of Bert C. Ahrens, executive secretary of the association; Gilbert A. Force, assistant purchasing agent, Northwestern University; George S. Frank, Manager of Purchases, Cornell University, and Claude L. Hough, Jr., Supervisor of Purchases, The Principia.

Mr. Abbett made a brief accounting of the activities of the association's Surplus Property Committee which is made up of Executive Secretary Ahrens, Foster Cole of Miami University, George Frank of Cornell University, D. V. Garstin of Yale University, and himself.

The subject, he said, is one that has caused a lot of worry and disappointment, and stated that the committee has been in constant touch with every phase of surplus property disposal for educational institutions, whether through donation or implementation of Section 13 of the Surplus Property Act. Many meetings have been held in Washington and elsewhere, and the committee has collaborated with the American Council on Education in the publication of surplus property news service for distribution to colleges and universities.

Postulating that the charge might be made that the results of the committee's activities were not concrete enough, that they have not placed surplus property within reach of the members, he stated that "If we failed in this respect, we did so not because of our lack of effort or sense of obligation to the membership, but because there was no bone in the cupboard.

"The efforts of the committee," his report continued, "were directed toward (1) interesting individuals in responsible governmental positions in the problems and needs of education, (2) working for changes in existing organizational set-ups or regulations to facilitate surplus disposal, and (3) accumulation of information to assist the membership in the procurement of surplus property.

(*Continued on page* 318)

G. R. Kavanagh (Berea College) and D. F. Watson (University of Chicago) discuss E & I services

W. S. Price has returned from Army service to resume his post as manager of E & I Cooperative

Lieut. H. Mutispaugh is returning to Rollins College as Purchasing Agent and Asst. Bus. Mgr.

AN X-RAY OF YOUR PURCHASING DEPARTMENT

You'll understand your job better and do a better job by evaluating departmental performance, even if you don't come out with a formula

By LESLIE F. ROBBINS
Purchasing Agent
University of Colorado

IN suggesting an evaluation of the purchasing department under the X-Ray, we are trying to find out what kind of a job of procurement the department is currently doing as compared with what someone thinks could be done or ought to be done. It may be a process of comparison with an abstract standard or of measuring current performance against past performance. It may be a comparison of centralized purchasing with some former condition of decentralized purchasing. It may be a routine check-up or it might be a serious diagnosis preparatory to a major surgery!

As soon as the purchasing duties are segregated and sentralized in an organization, the purchasing authority delegated and an appropriation of funds allocated to cover purchasing salaries and supplies, the function of purchasing is subject to fluoroscopic diagnosis in the revealing X-Rays of cost and accountability. From then on, any failure of performance, any lack of adequacy or any disproportionate cost, is subject to appropriate corrective measures, and rightly so.

Time passes; perhaps the purchasing department comes to be taken for granted. Even the requiring of periodic reports may go by default. The *fact* of procurement or the *presence* of the materials where and when they are needed is assumed to be the purchasing department's best report. Only a lapse or a failure may be considered to require an explanation. But the head of the purchasing department should wish to know something about how his performance is measuring up. As a minimum, the least concerned purchasing agent should be interested in learning how the department's current operations compare with past performance.

There is no quick and easy way to learn in specific terms just how the purchasing department is performing, if the *intangible* factors are to be included in the evaluation. Before you launch upon an X-Ray diagnosis of the department, it might be well to ponder the liklihood of the results justifying the effort. To set a definite date and say, "As of that day, I shall find out how my purchasing department rates", probably would mean that months later when the returns are all in, the information will be so out of date as to be of questionable value. If, on the other hand, the intent is to be establish a continuing basis for a continuous evaluation, it should be recognized that such a procedure would call for considerable consistent servicing, in order to be effective.

Many papers have been written on the problem of evaluating the effectiveness of the purchasing department. The almost unanimous verdict is that finding a very definite yardstick is a rather hopeless prospect. Too many intangibles and imponderables are involved. It is not easy, for instance, to evaluate the *intrinsic* worth of a chane in quality, or to determine how much discount to assess to compensate for a mistake or other negative value which might be chargeable to the purchasing department.

There will always remain much room for differences of opinion concerning the worth of many intangible factors, but where there is a willingness to express positive evaluations, it should not be entirely impossible to give those expressions an approximate interpretation or to reach something approaching a composite conclusion.

Analyzing the Problem

The first and most obvious, but certainly not the only significant factor to be a target for an X-ray evaluation of purchasing, is the dollars-and-cents savings. This factor has two distinct elements: first, savings due to lowered unit prices, and second, somewhat conversely, the intrinsic value of purchasing a quality or grade suited to the particular need, even at a higher price.

Price savings usually result from the systematic application of proven purchasing procedures: effective competition, standardization upon a smaller number of varieties, sizes, etc., pooling of requirements, seasonal buying, locating new and better sources, developing acceptable substitutes, better anticipation of need, and such like. Buying a quality better suited to the particular need, even at a higher price, may often result in a real financial saving or profit in the end, but measuring those profits in cash terms may not always be easy.

In making price comparisons, the figures used should be the most recent net figures as compared with the figures which represent the normal average net cost under equal quantity and quality conditions experienced in the base period used, adjusted to cyclical changes. The net savings are the gross profits from

Address at the Silver Anniversary Convention of the Educational Buyers Association, Chicago, May 2, 1946.

purchasing and may be expressed either in dollars or in the percent of the previous cost. In this paper I am suggesting the percent designation, since I shall try to combine price savings with quality savings. The percent of saving will serve as a common denominator. We will subsequently need to find a technique by which to express profits due to improvement in quality in terms of the percent of improvement.

There is always the lurking danger of negative values — losses in purchasing, which will have to be entered on the debit side of the ledger. Mistakes cost money. They should not be covered up or ignored under centralized purchasing any more than under decentralized purchasing. An error frankly faced is an error not so likely to be repeated. Was there a preventable delay in the processing of an order, causing loss of operating time, undue expense or irritation? Was there an instance of higher-than-usual depreciation in a piece of expensive machinery because the purchasing department bought the wrong kind of lubricant? Was a sizable cash discount passed up when the invoice clerk in the purchasing department took an extra day off? Probably such negative values should be assessed by the officer next in rank above the person who commits the error.

Purchasing Costs

The cost of purchasing, expressed in dollars of purchasing department expense per purchase order issued, is sometimes cited as an indicator; but that figure can be no true index of the worth of the department to the institution. Many more purchase orders can be processed if less time and effort are put into the processing of each order. Keeping down the cost of running an institution may be over-emphasized to the point where one is tempted to philosophize that if the main purpose is to cut expenses, why not close the place up and eliminate all of the expense? The aim of keeping the cost of running the purchasing department within reasonable bounds is a laudable one if there is a consciousness of the inevitable parallel between the cost of desirable services and the profits from those services which will have to be foregone if those services are curtailed by inadequate provision.

In computing the cost of centralized purchasing to compare with costs under decentralized purchasing, it is logical to exclude such costs as would have been incurred also under decentralized purchasing. To cite an example of such costs: purchase orders have to be written whether the function has been centralized in a separate department or not. It is logical, therefore, to omit from the cost comparison the salaries of order writing clerks and the supplies and equipment which they use. Additional supervision or managerial costs under centralized purchasing, i.e. the salary of the purchasing agent, may not be all added cost since some one or more persons probably gave substantial portions of their time previously to this duty. In general, most of the legitimate costs of effective purchasing are actually incurred, either in direct purchasing department expense or else in potential savings lost because of the lack of effective purchasing.

As a supplement to the dollars-and-cents profits from purchasing, it is our duty to use our X-ray on the less tangible but no less real values accruing from effective purchasing. These values include such benefits as reduced inventory, due to better controls; fewer delays, due to better anticipation of need; more prompt acquaintance with new materials developments; consistency in purchasing policy; greater interchangeability, due to standardization; better supplier good-will; and more adequate inspection of the goods bought, resulting in more prompt and effective claims for adjustment. Such values are justifiably anticipated in changing from decentralized to the right kind of centralized purchasing.

The fluoroscope may reveal that the war-born epidemic of buying "scramble-fashion" may have left a residue of bad purchasing habits in our systems. Four years of buying anything we could get at any price asked, have undeniably left their pock-marks upon us. As sanity returns to the market we should rapidly revert to sound principles of effective purchasing. The theme of this convention is "What's *new* in purchasing?" but perhaps we also need to recapture some of the *old* sagacity which we may have laid away or temporarily lost.

Purposes and Objectives

At this stage, it might be well to re-establish the fundamentals of the purchasing function. What is the aim and purpose of scientific procurement?

The aim of effective purchasing is to procure materials and services of the most appropriate quality for the particular purpose, at as low an ultimate cost as is obtainable consistent with sound policy, and to have the needed amount on hand at the time and place it is needed, within a minimum of excess. That statement represents an abstract ideal. Included within the statement are several variables which might give trouble when we try to make the abstract more complete. What is the appropriate quality? What is sound policy? What is the right quantity? Those decisions imply personal judgment. What person's judgment?

Who Should Read the X-Ray Plates?

In his own opinion, a buyer might be one thousand percent almost all of the time. Much of the factual material on which the judging of the work of the purchasing department will be based will come from the records of the department's daily operations. The assessment of those facts should not be left entirely to those who may have an interest in a favorable evaluation. Some of us tend to rate our own contributions too highly and others are too modest. Where quality has not been

Claude J. Black (Indiana University) and A. G. Burks (University of Iowa)

L. G. Baker, Chief Purchasing Agent, University of California

Assistant manager Ella Carson of the E. and I. Cooperative Service proves to R. B. Jenkins of New York University that she knows how to merchandise E. and I. offerings and services.

changed, price figures will speak for themselves, but the evaluation of quality changes, service and other intangibles may need to be modified by qualified opinion other than the buyer's.

Those who are best able to give a valid answer should be asked what they think of the new floor wax. Is it better? If so, how much better? About how much more is it worth to us than the old kind? The superintendent of buildings should be in on the answer, and the men who use the material; perhaps other persons. Descriptive adjectives have variable meanings in the minds of different people. In rating the work of the purchasing department we should attempt to get answers expressed in terms which are reducible to some unit of measure which is capable of incorporating negative values and unfavorable opinions, if such there be, along with the plus values.

What Is Quality?

A buyer can distinguish at least four ways in which quality as a purchasing factor can be classified:

(1) Items wherein adequate quality is paramount. Example: lubricants, the lack of adequate quality of which might threaten dire consequences to a piece of expensive machinery.

(2) Items wherein quality is not a *selective* factor. This might be because the standard quality is readily available from any of several sources. Example: nails or Portland cement. Or it might be because there is only one logical source, as for example: repair parts for a certain machine.

(3) Items which vary legitimately in both quality and price. Quality in such items is a relative matter and is related to the ultimate cost per unit of utility. Real purchashing astuteness is called for in the procurement of items in this class. The constant aim is to get better values—better quality *if* the increased unit price is not out of proportion. For example: in buying coal, the lower the cost in cents per million. B. T. U. of available heat the better the job of purchasing. It's more than just a matter of price per ton.

(4) Requirements wherein the principal considerations are those of propriety, good taste or correctness of appointments. An artist, an interior decorator or a professional person is usually a law unto himself in his own field when consulted by a layman. When purchases are made in this class they are either 'right' or they are not. In this category, competition is likely to be secondary.

Finding a Yardstick

The problem of giving an evaluation to a quality factor will arise whenever there is a change in specifications. If the purchasing department has initiated the change, the score will be a purchasing department score. Every change which has any quality implication should be subject to evaluation. Different people have differing opinions and the estimate of the effect of a change in quality will vary depending upon who is doing the evaluating. A part of the problem is to determine who is qualified to judge quality on each respective item and another part is determining the relative weight each opinion should have. These people should be identified on the purchase record card. Out of a possible 100 point score, for instance, it might be decided to allocate 50 points to the laboratory tests under carefully controlled conditions, 40 points to the opinion of the janitor who uses the floor wax, and the other 10 points to the judgment of the superintendent of buildings.

The next step is to obtain those opinions or ratings in the form of expressions which will be both quantitative and amenable to consolidating into a composite index or percentage score. I should suggest the use of a report slip bearing a few carefully worded questions. It might read:

"In purchasing the material indicated at the top of the slip, a change was recently made for certain reasons substituting X brand in place of Y brand which we previously used. Regardless of any difference in price, will you please give the management the benefit of your considered opinion of the effect of this change as related to quality or suitability *for our particular need.* Is the new material much better?——, some better,——, no better and no worse?——, some poorer?——, much poorer?——. Will you please further express your opinion in terms of percent; for instance, you may feel that the new brand is 25% better or 10% poorer, etc., ———%. Please use the back of this slip for further comments. The opinions you give should be your own, not someone else's."

Each respondent thus records his opinion of the qualitative effect of the change, in quantitative terms. When the replies are all in they are duly weighted and the composite score is computed. This score stands as the evaluation of that change in specifications until further change is made or until some one's opinion changes. In any case, the purchasing department has the benefit of qualified opinion of the product as well as an outside opinion of the department's purchasing judgment. The score will probably be as close an approximation of an objective diagnosis as is possible of practicable realization.

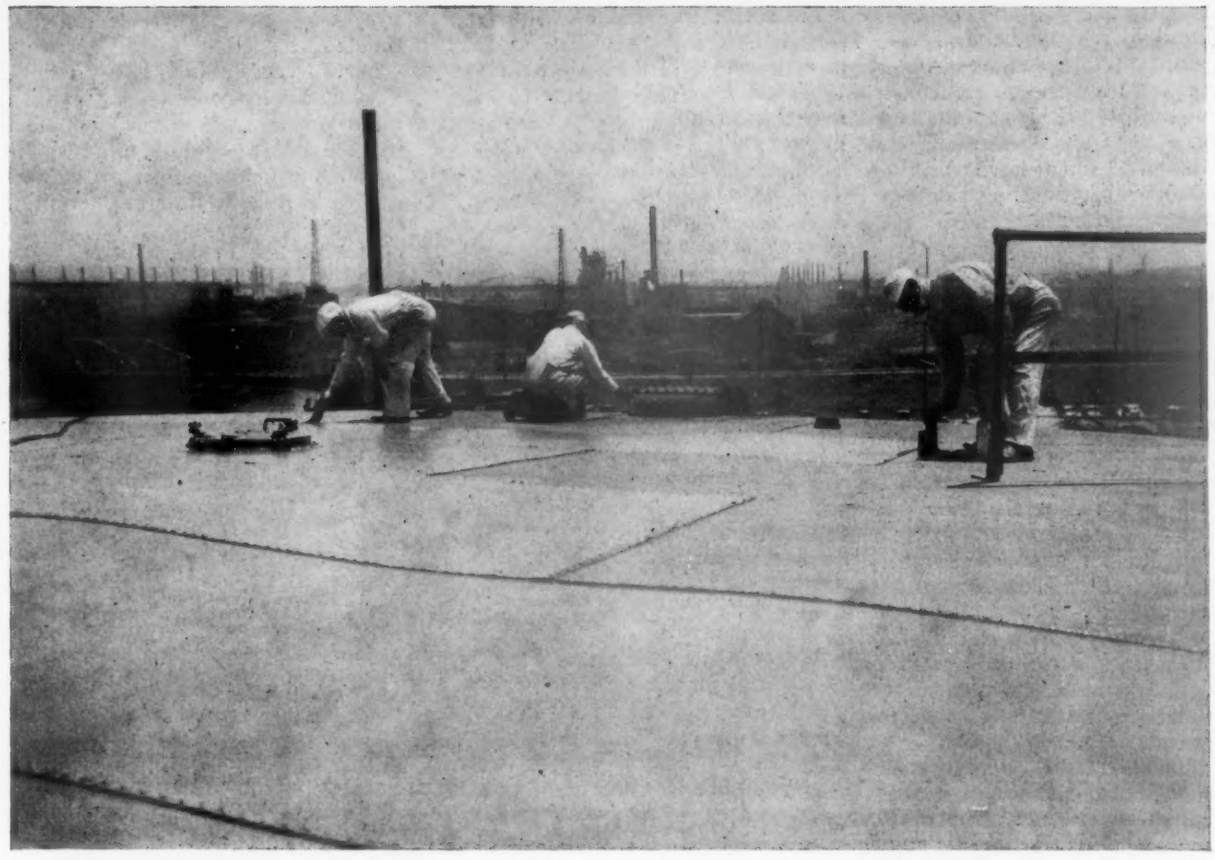
Sampling Technique

Complete and close evaluation would entail a rating of each and every change in specification and the price paid on each and every order. However, in a large institution which is issuing, say 25,000 or more purchase orders a year, it might not be feasible to rate so many orders. A sampling technique is practicable, using every tenth order, or every twenty-fifth or some other arbitrary frequency of sampling for specimen results. The score for the sample can be safely projected to the entire volume of the year's business and the results will be a relatively reliable indicator.

Intangibles

There are other factors in the purchasing function that are even more difficult to evaluate than quality standards of materials. Does the purchasing department build goodwill for the school or does it leave

(*Continued on page* 312)



The alkyd resins have made possible much greater durability and protection under severe conditions of exposure and use

NEW DEVELOPMENTS IN PROTECTIVE COATINGS

Research in the paint industry has produced more serviceable and attractive finishes for many industrial and commercial applications

By J. S. LONG

Devoe & Raynolds Company, Inc.

THERE is an interesting tendency to dramatize technical and industrial progress. Popular fancy is caught by catch words and phrases. But the so-called romantic side is often a bit misleading. I prefer to describe a little steady development that has been going on in a number of products, and to say in a conservative way that a few new and better raw materials are now available and others are gradually coming, and that on the basis of these newer materials a little progress has been in developing better paints, varnishes and enamels.

The paint business is a progressive one. It not only keeps pace with general scientific developments, but stimulates these and to some extent is an active contributor. However, before we are willing to come out with brand new products, there is a lag of at least one year in the case of interior products and two to three years in the case of exterior products before we are willing to sell a new type product based on some new raw material. It must first be tested out in all of its aspects, including stability in the can, over a considerable period of time. If this were not so, we could and would easily get into some awful jams. Hence, some of the things that are in our minds now and on which we have real enthusiasm cannot be discussed because insufficient time has elapsed to do the thorough testing job on actual houses, interior and exterior, to justify releasing the products for sale.

There is a definite and increasing trend away from the tung oil-phenolic resin varnish finishes formerly used. These are being replaced by alkyd resin vehicles.

Alkyd resins are made by cooking together, in closed kettles, carefully proportioned quantities of glycerine, phthalic anhydride, and oils or fatty acids. In this process they unite chemically to form the particle or molecule of the new resin. This is

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Abstract of an address given at the Silver Anniversary Convention of the Educational Buyers Association, Chicago, May 2, 1946.

one of the distinct differences between an alkyd resin and the previous orthodox varnishes in which the constituents did not combine chemically and the proportions might be anything.

The alkyd resins have many points of superiority, arising largely from the scientific procedure of manufacture. They have better color, better odor, less decomposition, faster drying, better resistance to scrubbing with soap and water or mild alkali, and greater uniformity. They also have higher cost.

Alkyd resins, especially those made from soy bean oil rather than linseed, have three important points of superiority:

(1) Alkyd films are unusually tough.

(2) Alkyd films have minimum tendency to yellow; in fact, this tendency is negligible.

(3) Alkyd films resist ultraviolet light (sunlight) better than any other commercially practical types.

One reservation should be made. They will not be generally used in exterior house paint for the body of the house, but rather for trim and shutter colors. The reason for this is that in order to stay relatively clean, a paint should have the ability to cleanse itself, or wash its own face, after chalking begins, so that a good rain will carry away the dirt and soot along with the loose chalky pigment beginning with the second summer. We could design a paint with greater durability. In so doing, the rate of chalking or erosion would be so slow that the dirt would remain on the house, impairing good appearance. So we adopt a compromise between durability and beauty. Alkyd resins do not lend themselves well to this compromise. They withstand sunlight too well.

Until very recently, greens and blues were unsatisfactory. A new class of pigments, the phthalocyanines, are lightfast and clean in color and have high hiding power. By formulating these in alkyd resin vehicles, we can now give you beautiful greens in trim and shutter paints which will hold their gloss much longer and which have much more faithful retention of the original colors—blues, greens, browns, grays, buffs.

The same improvement has been recorded for floor and deck and other enamels made with alkyd resins. They withstand abrasion of leather soles better than a soft oil paint. They are much faster drying. Tests on the New York State abrasion machine, using fine, uniform, sharp sand as the means of abrasion, show that these enamels withstand abrasion in a ratio of 2.5 to 1 as compared to a soft oil paint such as was formerly used. In other words, they will stand up two and a half times as long for the same thickness of film. In addition they will keep their gloss and show faithfulness of color retention in about the same proportion.

Decorative enamels are often used for interior work. People have become quite accustomed to the yellowing of white enamels and semi-gloss finishes. They rather expect it and do not complain. Through the development of soy bean oil alkyd resins and other modern vehicles, instead of relying on nature's offerings of the drying oils and resins, it is now possible to produce flat, gloss, and semi-gloss finishes which will not change color appreciably on the walls and ceilings of rooms, factory buildings, offices, schools, hotels, hospitals, etc. About half the sale of interior enamels is in white. These products can now be very white to start with, and will remain white. Or if they are tinted to cream or ivory or oyster white, they will remain that color, showing very slight change in color through long periods of time. The same principle applies to color changes in blacks and other colors, and has been successful in automobile and refrigerator enamels. The achievement of relatively non-yellowing vehicles represents one of the real advances of the last few years. These materials are available now.

Mill whites are essentially white enamels. They are not required to dry as rapidly as the "four hour" enamels, but they must have better brushability. With higher rates of pay for painters, it is essential that they be enabled to spread as many square feet per hour as possible. Frequently mill whites are applied to large areas, where a painter must paint one area and then move his ladder and paint another area. Consequently it is desirable to maintain the "wet edge" longer than in an extremely fast drying enamel.

It might be well to note that any design or formulation of a paint product represents some compromise. It is not yet possible to combine in one package the ultimate of all properties that might be desired. In general, each class of formulation is designed to achieve more and more properties without serious degradation of the others; but the element of compromise is always present when we raise a given property until such time as we achieve the ultimate ideal, which combines excellence in every property. We do not feel that this has yet been reached.

The properties and quality of paint start in the manufacturer's laboratory and are confirmed by exhaustive tests before a new product is put on the market

Library of Colors

In the past, one of the real annoyances in connection with painting has been the selection of colors. Attempts to describe, or to reach an understanding between the person choosing the color and the painter who is to achieve it were time consuming and often unsuccessful. We have long recognized the difficulty due to the fact that the color of a sample freshly applied to a wall is quite different from the color it will have when it is completely dried. In addition, while it was highly desirable to have a great variety of colors available, manufacturers could hardly afford to stock ten different ivories and twenty greens, etc.

Accordingly, several years ago, we worked out a system of ten different *toner* colors, in ready mixed consistency, on an alkyd resin vehicle base, put up in jars or cans from 1 to 32 ounces. You buy enough white paint (base) to do the job, and enough toner color or colors to tint it to the desired color. A book was prepared containing 230 colors or hues painted on paper. You pick out the one you want, and the book tells you how it can be obtained—by adding four ounces of one toner and two ounces of another to a gallon of white. The quantities chosen are all even number proportions. The whole system represents a job of tremendous detail.

In making up this system, it was possible to achieve several thousand colors, but the number possible was reduced to what was considered a practical selection by having a committee of decorators choose a list. About 20,000 of the first edition of these books have been distributed, and they have been adjudged to be a very helpful and useful tool in the selection of colors. The first edition was for flat paints only. It is being extended for the forthcoming issue to include five different kinds of paint: flat, semi-gloss, gloss wall paints, house paint, and enamel. On orders of sufficient size such as are often encountered in maintenance work, the tinting to match a shade selected from the library of colors book can be done at the factory and the order shipped tinted to shade.

The color scheme is important; so is resistance to abrasion and wear on floors and furniture

Color and Light

In the past, the electrician often installed the fixtures without reference to the lighting, yet obviously these are related. It is desirable to attempt some measure of correlation between these two factors. Both of them are susceptible to exact mathematical description. Simple light meters can be used to measure the foot candles at a given surface, and if this is inadequate you should see that light sources are provided which give greater intensity of light.

There are certain esablished zones of lighting which are considered adequate for the variety of purposes, depending on whether some one is to do writing on a given surface or fine machine work, whether the work to be done is merely rough work such as washing or ironing, packing, and the like. The General Electric Company has made an extensive study of this. Recommended values for a few typical kinds of work are:

Under 10 foot candles — Corridors, auditoriums, railway platforms, bulk storage; coal and ash handling, foundry charging and casting floors.

10 foot candles — Shipping and receiving; rough bench work, machine work and assembly; welding; glass blowing; paint manufacturing; leather tanning and stretching.

20 foot candles — Knitting machines, printing presses, electrotyping, light colored leather and cloth fabrication, rubber products fabrication, retail stores.

50 foot candles—Drafting, fine machine work, assembly and inspection, hand sewing, jewelry repairing, show cases and displays.

100 foot candles and above — inspection, dark leather cutting and grading, tobacco grading, show windows in bright districts, hospital operating tables.

This ties into paint selection as follows. The light reflection of a white painted surface is much higher than that of any other hue or color. The standard of whiteness is a block of powdered magnesium oxide. The light reflection of this is taken as 100, and other light reflections are measured in comparison to it.

On this basis, a first quality white paint before it becomes dirty will show a light reflection of about 89%. As tinting materials are added to the white to achieve the other hues such as light blues, greens, ivories, peach, etc., the percentage of light reflection goes down and, of course, the darker the color the lower the light reflection. This should therefore be taken into account in deciding on either the hue itself or the depth of hue.

Some typical light reflection percentages are given in the following table:

White	89%
Extra Light Ivory	75
Warm Cream	71
Flesh	66
Pale Blue	60
Aluminum	55
Green Tint	51
Rose Tan	47
Golden Brown	11

Note the extreme difference between the reflection of 89% for a white as compared to the other extreme of 11% reflection of a golden brown.

Not only is the total quantity of light important, but some consideration should be given to the type of light. Fluorescent tube lights differ from incandescent bulbs, and there are several types of fluorescent tube lights with different phosphors on the surface of the tube.

Color as it appears to the eye is the result of light from a source striking the painted surface and being reflected to the eye. There are therefore three primary factors: the light source, the painted surface, and the human eye. In any event, the nature of the primary light source is one of the factors. If you choose a color in bright daylight and then look at that color under a fluorescent tube light, in many cases you will find that there is a noticeable difference. Hence, if you are going to rely on tube lights during the winter months in a given room, it will be well to select the colors under such a light and not under some other condition. Particularly with certain light tints, you might get an entirely different color effect than had been planned.

Varnish is not used in the quantites that it once was. Nevertheless, substantial quantities of clear varnishes are still used on floors and on some trim, on exterior doors, boats and on a variety of furniture. One of the important developments of war years, now available, is a series of varnishes which combine four important elements:

(1) Slightly lighter color;

(2) Much greater resistance to scrubbing with water, soap or mild alkalies;

(3) Toughness and abrasion resistance far beyond the best varnishes made previourly;

(4) Much faster speed of dry.

Heretofore there have been varnishes that dried very rapidly but were short and brittle. Others were elastic but slow drying. This one possesses the combination of toughness, water resistance, abrasion resistance, resistance to sunlight, and speed of dry, to extents not attained in earlier products. It is important because varnish of one type or another is used not only as clear varnish, but also as the vehicle in all kinds of interior finishes—flat, semi-gloss and gloss for ceilings, walls, floors, furniture, etc.

Coordination of modern light sources and the light reflecting values of interior paints results in better working conditions

Painting Concrete and Cement

The protection of porous surfaces such as roofing tile and concrete is a serious problem due to the contact of moisture with the under side of the paint film resulting in alkaline chemical action or actual lifting action. Either of these effects destroys peeling and scaling of paint coatings. The full solution of this problem depends on the clearly established premise that some treatment should be evolved which would prevent the water absorbed in these porous structures from actually coming in contact with the back or under side of the paint film.

Such a process has been developed, utilizing the principle of "negative capillarity." It consists of a thin penetrating liquid which is preferably applied warm, to a warm surface. It is accordingly most appropriately used during the warm summer months, and should not be applied during the winter season. The material penetrates completely into the pores. It coats each pore with a composition containing drying oils and wax, and when the solvent has evaporated each pore is coated with a material that liquid water cannot wet and capillary action is repelled. From there on, any liquid water that is in the interior can not come out through the pores as liquid water carrying alkali. Some of the water can evaporate to form water vapor and gradually escape through the pores, but this is at such a slow rate that it does not blister or force the paint off the surface.

It is to be emphasized that this is a treatment preliminary to the applications of any paint coating. It should not be considered as a primer coat, but as a specific treatment of the surface to be painted. It represents an extra application that contributes no covering or opacity, but it is undoubtedly the most essential and fundamental thing that must be done to insure the successful painting of porous concrete surfaces. Unfortunately, it has no value if the surface has already been painted, unless you sandblast to remove the old paint and develop a new, fresh surface. Otherwise the material can not penetrate.

Cement base coatings have been characteristically difficult to apply as a film of uniform thickness and appearance. This limitation is obviously due to the rapidity with which the water is absorbed and sucked into the porous surfaces, leaving the coating too dry and stiff for even, uniform spreading. The problem has been one of using the full potential values of Portland cement and developing a formulation and product that could be applied without the prompt loss of the mixing water, to produce a film coating of uniform thickness and one that would spread and flow and level, with the general properties of an oil paint.

This has been accomplished through research. There has been achieved a most interesting and pronounced transformation of a cement wash into a well balanced technical product, possessing all the properties essential for practical usage and application. This new formulation has the distinct quality of occluding and holding the mixing water in the body of the coating, not only during the actual time of application but for a considerable additional time. As a result of this physical occlusion, the water in the film serves to retain the mobility and liquidity of the coating during the full and complete process of application, and also serves to accelerate the normal process of hydrolysis and hydration of the cement.

This development considerably extends the usefulness of a Portland cement base type of material. It would appear that one of the more useful and practial directions would be for general use on exterior as well as interior surfaces of cement and cinder block walls. The application of one or two coats will minimize any further penetration of moisture. In many cases one coat is adequate. The new formulation is available in attractive colors. This type of improved water-occluding material has useful application on the interior of basement and cellar walls, for both decoration and resistance to passage of dampness and moisture.

INDUSTRY and GOVERNMENT JOIN in SPECIFICATIONS PROGRAM

Requirements, standards, and industrial practice are correlated in new drive to develop practical and economical buying definitions in the Nation's shopping list

By A. N. WECKSLER

DURING the war, there was an intense interest on the part of industry in everything from Washington. Government, to all practical purposes, monopolized business thinking.

Now that the shooting is over, Government agencies feel that the pendulum is swinging away in a rebound which does not take into account the fact that the Government still is the largest single buyer in the country, and that there are still Government activities of vital importance to industry.

Among these are the specifications which are established by the Federal Specifications Board, and which serve as a standard for procurement by all Government agencies. In addition, the Government "specs" can serve as a standard for purchasing agents in industry and commerce.

Willis MacLeod, Acting Deputy Director of Treasury Procurement, in charge of the standardization program that has enlisted the aid of an Industry Advisory Council in preparing specifications

Purpose of Specifications

The function of a specification in industrial procurements is two-fold. Primarily it is to insure that the item to be purchased meets the standards of performance required. A secondary function is to broaden the base of supply by increasing the number of potential suppliers, and to effect reduction in price.

Where items to be purchased are of a general and standard nature, and are to be used for a general and standard use, it can be readily advocated that specifications are not as important as the name and integrity of the seller.

Where the item, however, is designed for a specific use, as opposed to a general use, the buyer naturally states the conditions of use—and through these conditions, in effect, establishes specifications.

The Federal Government takes this process a step further and formalizes the procedure by fully defining the standards of quality and performance required of the items to be purchased.

One of the pitfalls of such practice has been that the various Government departments considered their individual needs to be different from the norm, and through this approach developed variants in specifications which served to complicate the job of the supplier.

This practice led to the establishment of the Federal Specifications Board, which reviews the requirements of the various Government departments and seeks to develop standard specifications for the same of similar items.

One result of this activity is to concentrate procurements, with the attendant economies of mass purchase. Still another is to increase the number of possible sources of supply.

Coordinate with Industry

Currently, the objective is to take this trend a step further and bring industry closely into the Government specification picture.

To this end, an Industry Advisory Council has been created to bring Government procurement practices more nearly in line with industrial purchasing and with prevailing manufacturing practices and developments.

Howard Coonley, chairman of the Executive Committee of the American Standards Asociation, has been appointed as chairman of the new council.

Appointed to serve with Coonley were: P. G. Agnew, Vice-President and Secretary of the American Standards Asociation; C. L. Warwick, Secretary of the American Society for Testing Materials; L. A. Danse, Chairman of the Metallurgical Committee of General Motors, representing the Society of Automotive Engineers; Thomas Spooner, Manager of the Engineering Laboratories and Standards Department of Westinghouse Electric Corporation; Harold S. Osborn, Chief Engineer of American Telephone and Telegraph Company; Vincent dePaul Goubeau, General Purchasing Agent and Director of Materials of the Radio Corporation of America; Warren N. Watson, Secretary of the Manufacturing Chemists Asso-

ciation; Clifford B. LePage, Assistant Secretary of the American Society of Mechanical Engineers; and Clarence L. Collens, Chairman of the Board of the Reliance Electric and Engineering Company, representing the National Electrical Manufacturers Association.

The Buyer's Interest

Inclusion of a purchasing agent in the membership of the council is significant of interest of PA's in the whole field of specifications. Further, the Federal Specifications Board itself was established by Clifton Mack, Director of the Treasury Procurement Division.

One area of interest is the need for stabilizing procurements in newly developed materials and metals where, through variants in trade practices, a purchaser of a finished product often complicates the work of the purchasing agent who will have to buy the ingredient materials to fill the purchase order. If the variants are reduced to practical standards, the PA can in turn establish firm lines of supply.

Few purchasing agents generate sufficient purchasing volume to initiate basic reforms, but Government as the largest single buyer can exert influence. At the same time the Government recognizes that it cannot bull such changes through. In fact there have been specific instances where the Government, through seeking to boost quality standards too quickly, has drastically limited the number of its suppliers.

An example is the case of procurement of gasoline for automotive fuel. During the war period, it was not posible to purchase the higher octant fuels—but there was the feeling that with the war over, there should be a quick return to the higher octane gasolines. When the Government sought to increase the specifications, it limited its supply sources too sharply and had to recede from its position.

Tangible Savings

As for concrete price advantages to be gained through use of specifications, Willis MacLeod, Acting Deputy Director of Treasury Procurement in charge of Standardization, cites the case of Government purchase of venetian blinds.

Says MacLeod: "We formerly paid an average of 36.7 cents per foot, with several types and varieties commonly purchased. Under the Procurement Division, procurement of this item alone amounting to roughly $100,000 per year, the price was reduced under specification techniques from 36.7 to 20 cents a square foot—saving $47,000 a year."

Another instance cited by MacLeod was the case of indelible ink, where through development of specifications, prices were reduced from $1.20 a quart to 35 cents a quart, and again in the case of spar varnish, where the final price was reduced 75%.

There is still another phase to the problem of specifications as they affect all purchasing agents. The Government is now considering a specification for wire-bound boxes, crates and adhesives, barriers and separating materials, shipping bags and a number of other packaging materials to determine how best to define the actual nomenclature under the freight classifications so as to obtain the lowest shipping rate.

In view of the broad categories of materials and products purchased by the Government, the specifications established cover practically every type of commodity.

A Continuing Program

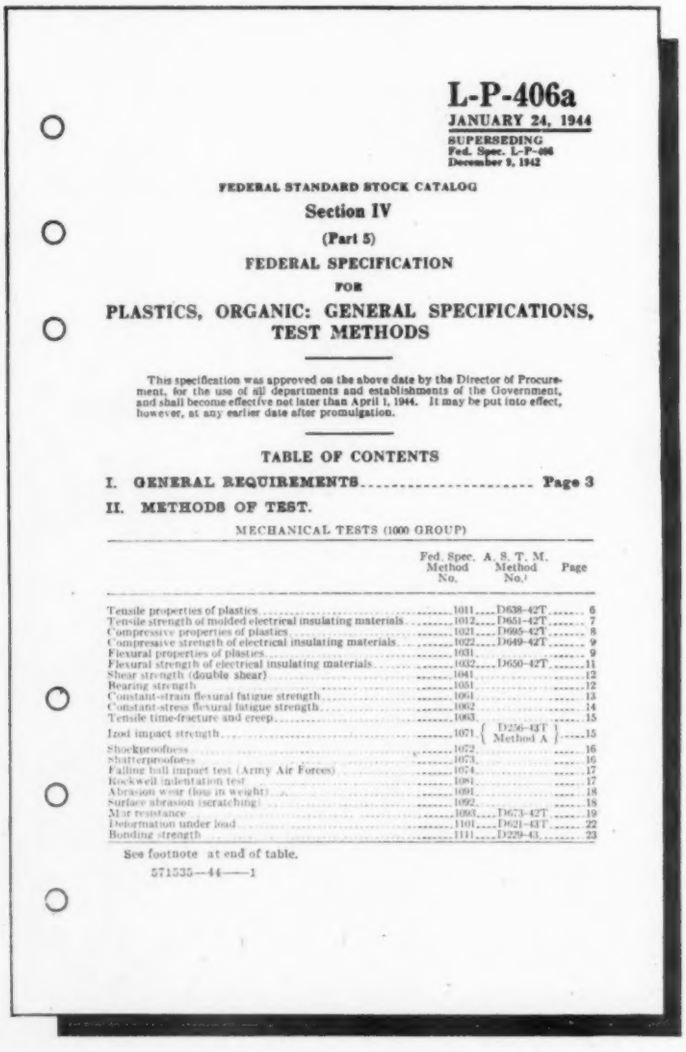
Of particular interest are the numerous developments in each category, and the various adjustments in supply of both substitute materials and a return to normal usage of natural products.

This means that to keep specifications on a realistic basis, there must be an elastic system under which the "spec" can be changed to take changing conditions into account.

A procedure which has been proposed and which was under review prior to approval, set up the following procedure for quick action on required changes in specifications:

1. In emergency instances, the Chairman of a Technical Committee shall arrange promptly a meeting of members of a Committee or Sub-Committee in order to initiate im-

Federal Specifications cover a wide range of materials, including recent developments



L-P-406a
JANUARY 24, 1944
SUPERSEDING
Fed. Spec. L-P-406
December 9, 1942

FEDERAL STANDARD STOCK CATALOG
Section IV
(Part 5)
FEDERAL SPECIFICATION
FOR
PLASTICS, ORGANIC: GENERAL SPECIFICATIONS, TEST METHODS

This specification was approved on the above date by the Director of Procurement, for the use of all departments and establishments of the Government, and shall become effective not later than April 1, 1944. It may be put into effect, however, at any earlier date after promulgation.

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See footnote at end of table.

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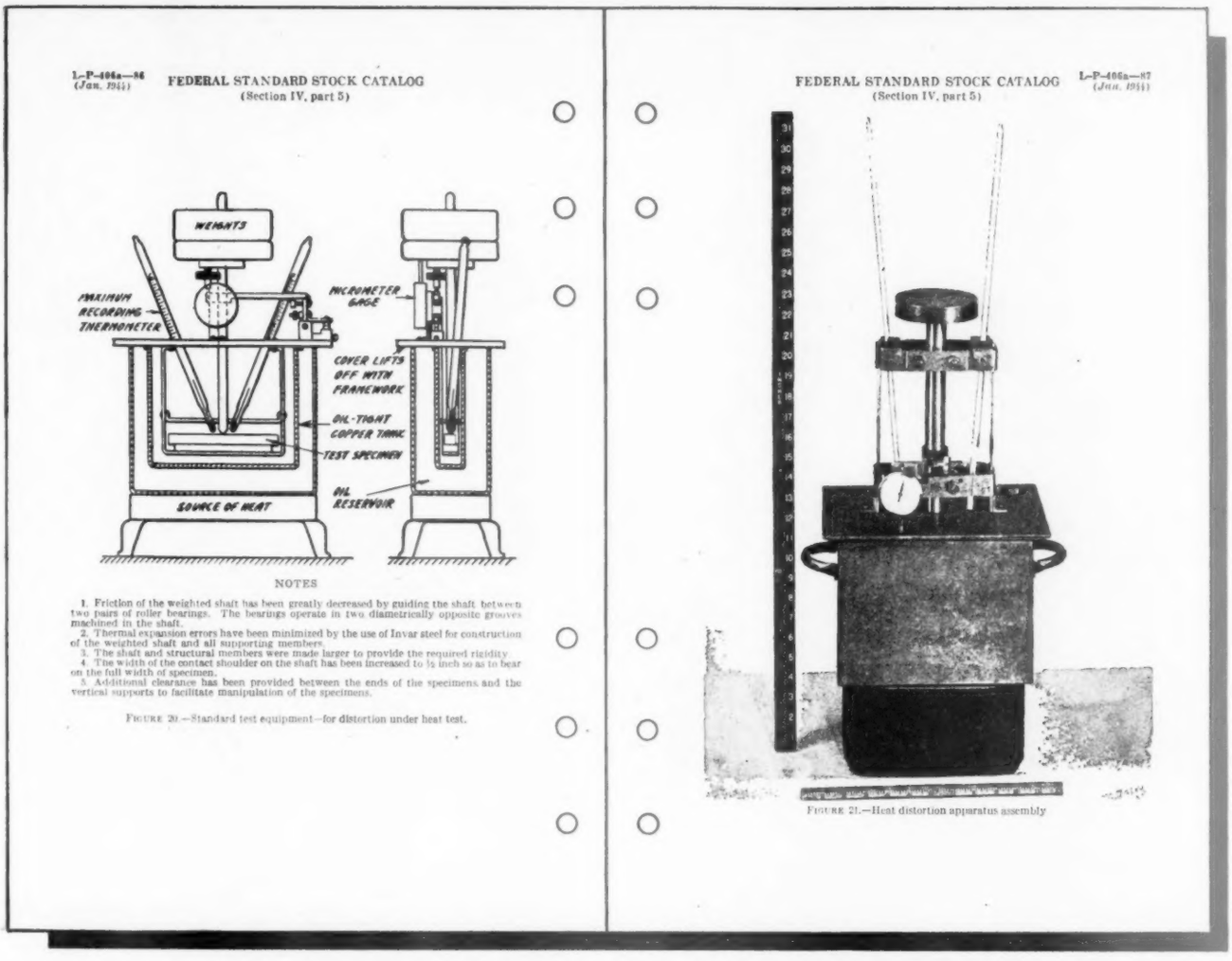


L–P–406a—86 (Jan. 1944) FEDERAL STANDARD STOCK CATALOG (Section IV, part 5)

NOTES

1. Friction of the weighted shaft has been greatly decreased by guiding the shaft between two pairs of roller bearings. The bearings operate in two diametrically opposite grooves machined in the shaft.
2. Thermal expansion errors have been minimized by the use of Invar steel for construction of the weighted shaft and all supporting members.
3. The shaft and structural members were made larger to provide the required rigidity.
4. The width of the contact shoulder on the shaft has been increased to ½ inch so as to bear on the full width of specimen.
5. Additional clearance has been provided between the ends of the specimens and the vertical supports to facilitate manipulation of the specimens.

FIGURE 20.—Standard test equipment—for distortion under heat test.

FEDERAL STANDARD STOCK CATALOG (Section IV, part 5) L–P–406a—87 (Jan. 1944)

FIGURE 21.—Heat distortion apparatus assembly

Typical specimen pages of the Federal Standard Stock Catalog; engineering data and drawings and product photographs are used to clarify the purchase specifications

mediately the preparations, revision or amendment of a Federal specification urgently needed.

2. The Technical Committee shall, in course of developing an urgently needed new specification, revision or amendment, asure that the industry concerned can meet the provisions of the proposed specification. This may be done either by direct conferences with selected representatives of the Industry concerned, by direct or telephonic conversation with selected supply, or user group representatives, or where time permits by telegraph or letter. It shall be the responsibility of the Technical Committee to assure supplier's ability to meet the requirements of the specification on a reasonable supply basis.

3. The Technical Committee may develop such urgently needed new, revised, or amended Federal specifications through the appointment of a specialized Sub-Committee.

4. Simultaneously, with the development of the technical requirements of such specifications, special agency requirements, such as packing and packaging shall be considered. In the event that further correlative studies are necessary by agencies, when packaging requirements are involved, the existing requirements of the agencies for packaging shall be used in the interim, followed by the development of further detailed studies.

5. The Chairman of the Technical Committee, on completion of an urgently needed new specification, revision or amendment, shall transmit it to the Executive Vice Chairman with the Committee's recommendation for promulgation. Transmittal memorandum shall include a statement as to the steps taken in consultation with industry and agencies represented on the Committee, indicating the adequacy of specification requirements from the view point of government needs and industry's ability to supply.

6. The Executive Vice Chairman shall be responsible for obtaining approval by the Federal Specification Board of the proposed urgently needed new specification, revision, or amendment. This may be done by calling a special board meeting, by direct contact of Board members leading to a majority consensus, or where time permits, by circularization with a definite time-limit.

7. Members of the Federal Specification Board shall, in these special cases, arrange for the necesary clearances and approvals by their respective agencies within the time-limit set. Where necesary, the Board shall in addition, assure adequate representation on the Technical Committee or Sub-Committee dealing with an urgently needed specification, so that the Committee may expeditiously arrive at the requirements consistent with the objective set forth above.

8. Where deemed necessary, subsequent to consultation with Board members, The Technical Committee

(*Continued on page 324*)

Apologists for America

By GREY LESLIE

THE aftermath of the war has accelerated the perennial crop of apologists for the United States. Every major decision and every pronouncement of American policy touching international affairs opens up the sluices of hortatory effusion from organized elements of citizens, usually of foreign birth or descent, whose traditions, affections and deeply imbedded antipathies are constantly active in a calculated effort to influence American thought in order to make it serve the interests of their previous attachments. Many of these people, who are dogmatically instructing America in its "duty" have developed a pattern of evangelical fervor. It is touchingly childish in its simplicity. With resounding oratory and with all the force of reiteration we are told that "America *must* insure peace and justice", "America *must* foreswear isolationism", "America *must* help war-stricken nations—friend and foe alike", "America *must* feed the starving millions", "America *must* assume a major role in the re-construction of the world", "America *must* instill democratic ideologies in the minds and hearts of formerly deluded peoples", and so on and on in a tedious proliferation.

One is deafened with the cheers and the acclaim for this interminable flow of sermonizing on America's "duty" and the orators glow and beam in the glory of it; indeed many of them find it quite a lucrative business.

There is a subtle preface to much of the "must" psychology. It has proved sure-fire stuff ever since the last war. We have had it dinned into our ears that America dismally failed in its duty to the League of Nations and that America was entirely responsible for the impotence of that nobly inspired institution. We are told, frequently with screaming trepidation, that we turned our backs on humanity; that the League failed because of our selfish isolation or because of our groundless suspicion of the motives of the European powers; that the failure of the League made a second catastrophic holocaust inevitable. The failure was always ours. America's immense contributions in blood and treasure in the first world war are entirely dismissed as superfluities, if they are even remembered, and the ignominious sobriquet of "Shylock" which was levelled at us in recognition of our assistance is forgotten.

We are now solemnly warned that we must atone for our sins of omission, and we are to do so by promoting, sponsoring, and financing indefinite and fantastic programs clothed in high sounding phrases of "collaboration", "spiritual and social uplift", "moral leadership" and economic help generally, for all the world.

Quiet reflection, however, evokes the disappointing recognition that most of the incantations are hollow, meaningless flatulences and that the obstacles of stark reality are not overcome by mere oratory. Any one of the "musts" when calmly and soberly examined, uncover multi-faceted problems which require unemotional study, analysis and appraisal as to their worthiness to be translated into action by us or anyone else.

The faculty of seeing things exactly as they are is too frequently damned as cynicism by shallow minds. Charters and pacts, regardless of the pomp and ceremony of their inception, are in themselves futile without the action which makes them effective. In all of the plans for world peace through six centuries there was always an implied control—whether by military or political or religious authority—and control implies the maintenance of a controlling machinery. Any effective peace will require collaboration, and collaboration can hardly be unilateral. Woodrow Wilson in his statement to the Congress announc-

ing a State of War, April 1917 said, "Our motive will not be revenge or the victorious assertion of the physical might of the nation, but only the vindication of right, of human right, of which we are only a *single champion.*" Our position as one ally among several is the same to-day as it was then.

Oddly enough, many of the utterly false and unsustainable pronouncements of rebuke are supported by American writers, commentators

and columnists. With this spectacle of a sizeable number of American penitents, foreign propagandists have taken up the business and it has led to a situation peculiar to the U. S. The enthusiasm with which foreigners, many of them refugees who have found a safe and secure haven in the United States, embark fearlessly on holy missions of instruction in our shortcomings and our duties in national and international relationships is really touching. Their utterances are filled with declamatory paradoxes. Their beneficent schemes are seldom seriously examined to discover under what conditions they may be established or endowed.

Resentment against such biased criticism always provokes a plaintive and injured response that all that is sought is "World-Wide Brotherhood" or "World Peace", etc., but all of the massive power of the U. S. can be frittered away—as it has been in the past—in meaningless gestures and sanctimonious attitudes which can never promote a sound organization of human society nor provide simple security for itself or the nations associated with it. American enthusiasts who succumb to the accusations of America's alleged failures, and are so ready to join such choruses, might profitably re-examine the history of this nation.

The truth is that American democracy, as a political system, is quite unintelligible without a very considerable knowledge of the conditions and trials under which it took shape. It is stupid to attempt to put any European system into it as in a ready-made garment. It would be tedious to recite the accomplishments of this nation in fourteen generations —accomplishments which have not been approached by Europeans in more than fourteen hundred generations. American institutions gave birth to the strongest and most productive nation on earth and one which robustly survived two of the world's worst cataclysms. The discovery of America was itself an act of faith—Columbus' faith, urging discouraged, fearsome, almost mutinous crews to "Sail on—and on and on!"; the faith of the Cabots, John Smith, Cadillac, La Salle, Calvert, Hudson, Baltimore, Oglethorpe; the travails of the American Revolution, the faith of the Founding Fathers, the faith of Lewis and Clark, the faith of Lincoln—and this faith in America as a political institution was the keystone of its greatness. That greatness was attained without material or continuing aid from anybody.

Love of country means pride in its past, its history, its tradition, its success over almost insuperable obstacles, but above all, a lively, constant, enthusiastic ambition for its future. Those who arrogate to themselves the unworthy authority of groundless criticism are incapable of sound judgment for a wider humanity.

We have witnessed sneering attacks on American traditions and the personalities whose accomplishments they embody. Popular confidence in the foundations of our institutions has been assailed in a peculiarly insidious fashion. We are being urged to emulate and cultivate foreign political and social systems on the crass assumption that our own have been discredited.

I should prefer to see and hear these sundry breast-beaters evidence some intense love for the America in which they live and have their being before I can be convinced of their expansive love for humanity in general. We are being urged to spurn the admonitions of the founders of this great nation, and being constantly roared at to precipitately adopt novel and unproved methods and schemes without study of their demands on us or meaning to us. For example, many of the global planners urge unrestrained lending and spending as if it were possible to purchase international affection or esteem or co-operation by that means. Dean Inge has said someplace that "The greatest obstacle to progress is not man's inherited pugnacity, but his incorrigible tendency to parasitism".

The great mass of Americans is more or less inarticulate in matters of international import; we are a complacent people, and many of us feel that we have given all the moral support required when we read approvingly of a conference or a pact or a charter or a policy put forward by our Political Leaders, outlining in glowing terms, an unselfish effort aiming at world peace; and then quietly go about our routine businesses. The complacency of the mass however, is greatly outbalanced by a clamorous minority of propagandists, agitators, missionaries, crusaders, exhibitionists and others—some well-intentioned, and some otherwise—who claim to speak for America.

It would appear that almost anyone who can spin out a fantastic theory of the failure of worldwide peace efforts of the immediate past, always charging America with the major share of responsibility for their failure, can readily find a publisher, anxious and willing to add to the depressing bulk of such literature. The press and radio abound with recriminations, arguments and importunities. The patient public is harrangued with exhortations and demands, always in the name of "public opinion"; and all of this Babel passes for American public opinion which it emphatically is not. Much of it is mere petulant chatter. Much of it is irresponsible. Much of it is prejudiced, and most of it for utterly selfish ends. Some of it is vituperative and at times actually libelous. Some of it borders on arrant dishonesty, but in the sacred name of Freedom of Speech and of the Press, it passes, because of the inherent tolerance and sense of humor of the bulk of American Citizens.

One gets a disquieting sense of impatience and fatigue with all this.

When President Truman announced the termination of Lend-Lease, we were subjected to a display of bad temper in a barrage of indignant reaction by eminent and supposedly responsible British Statesmen. We were told of their amazement and shock that "so great a nation ... would proceed in such a rough and harsh manner as to hammer a faithful ally, the ally which held the fort while their own American armament was preparing". Anyone read-

ing the Lend Lease agreement can readily discover that its purpose ended with the cessation of hostilities. The fact that the announcement of its termination was accompanied by President Truman's recommendation that any and all obligations under the agreement be written off was definitely ignored.

There has never been any doubt in American minds, except by a benighted and ill-informed minority, that Lend Lease was anything but a weapon of defense, and that all of the Allies relied upon it as a means of supplying that weapon. In the early days of the conflict the Allies furnished the men to use the tanks, guns, ships and planes we built for them. The men without the weapons would have been useless as the weapons would have been without the men. Now that the fighting is over, more than a million American casualties add grim testimony to our participation in the struggle, having furnished the men as well as the weapons. The simple fact is that we were forced into war because a group of power-mad tyrants were riding to crimson fame and mortally attacking democracy. We gave aid to, and joined forces and formed alliances with, those nations and peoples fighting in defense of their own freedom as well as our own.

Any impartial observer must aver that Lend-Lease was among the most important contributions to victory. It is as clear as sunlight that this greatest known international financial transaction was never conceived in terms of money loans. The language of the act admits of no ambiguity. Lend-Lease needs no defense, and most emphatically it needs no apology. It was the all-powerful weapon which brought victory to us as it did to all of our Allies.

More recently wide segments of the British Press, representing all of the political factions in that enlightened nation, have formed a chorus of harsh denuciation of the Four Billion Dollar Anglo-American Loan Agreement. We are told bluntly that we have been enriched by the war *(The Economist)*; that we have augmented our cities while our gallant British Allies were witnessing the ravishment of their own *(Weekly Tribune)*; that the "American Century" which had been promised (sic) as the prize of victory, will turn out to be an unmitigated evil *(Spectator)*; and that Britain will be compelled to invoke all of the escape clauses in the agreement *(New Statesman and Nation)*.

If these statements are characteristic of British sentiment toward the United States, and the British tradition of understatement would indicate that they are, the prospect of amity in International relationships has been given a staggering blow.

In many of the harangues of the apologists for America, we are exhorted to initiate a world-wide educational campaign to inoculate democratic ideals and principles into the minds and hearts of the peoples of the world, despite rather conclusive evidence that, in Eastern and Central Europe at least, it has pointedly been made known to us that our idea of American democracy for that sector of Europe is naively Narcissus-like. The fact that we have an educational challenge at home, calling for the instruction of our own prospective citizens in the duties of that citizenship, the content and benefit and responsibility of membership in an American type of democracy and in the Republic of the United States particularly, has never had the attention it demands.

Some of us have had the doubtful privilege of seeing a little into the political maelstrom of Europe since the war's end and have witnessed at first hand the reactions of the people to the first feeble attempts to democratize their political systems and thought. We have come back, as always before, to an ultimate realization of certain imperatives. Democracy as we know it, and would have it, does not suddenly bloom when the bloody fist of tyranny is lifted.

Perhaps the nations really searching for Democracy, as we interpret it, will merit its blessings when they pass through the travail we did. They and they alone will be obliged to determine the duration and nature of the probation.

Americans are not likely to ignore their instincts of helpfulness and sympathy, and a genuine and healthy urge to help others, but they demand that that assistance have at least the appearance of efficiency rather than mere exuberant spending. They realize that there is no commendable merit in mere squandering, and that the real helpfulness and utility of an organization is not to be measured by the astronomical size of its budget, nor of the number of spenders on its payroll.

Too many of the critics of America are chagrined because some of us question the sense of attempting to make the United States the Almoner of the world in perpetuity. We need constantly to be reminded that the history of the United States is a worthy one, and that carping critics can also be potential enemies. I for one am not ashamed of the lump in my throat when, after an absence, I again see the dome of the Nation's Capitol or the Statue of Liberty.

"Never mind the stars. I want to see if that P. A. is really as busy as he says."

N-A-X HIGH-TENSILE STEEL HAS ALL SIX—KEEPS ALL SIX

- HIGH STRENGTH
- EASY FORMABILITY
- EXCELLENT WELDABILITY
- HIGH FATIGUE-RESISTANCE
- GREAT IMPACT TOUGHNESS
- HIGH CORROSION-RESISTANCE

GREAT STEEL FROM GREAT LAKES

FOR LIGHTER WEIGHT . . . LONGER LIFE IN TRANSPORTATION EQUIPMENT

Combining great inherent strength with exceptional formability, N-A-X HIGH-TENSILE steel has wide application in the design of improved transportation equipment. Where reduced weight means increased efficiency, its high physical properties may be utilized to permit thinner sections; if greater durability is the important consideration, identical sections can be made stronger and tougher with N-A-X HIGH-TENSILE steel.

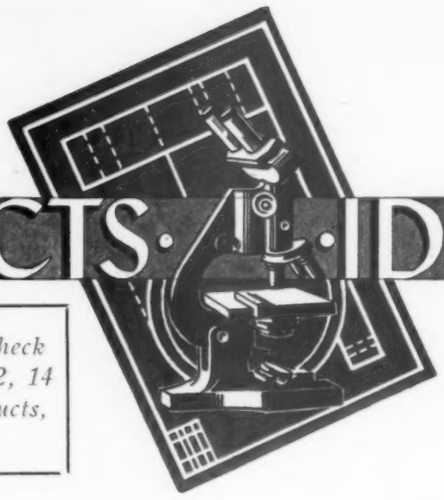
Consistent with the trend toward lighter, more efficient designs, N-A-X HIGH-TENSILE benefits the field of transportation by eliminating deadweight in favor of greater payloads.

GREAT LAKES STEEL CORPORATION

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN

UNIT OF NATIONAL STEEL CORPORATION

New PRODUCTS · IDEAS



Purchasing Agents and their Assistants are invited to Check the Coupons on the "Know-How" Pages, Nos. 10, 12, 14 and 16, for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

CENTERLESS LAPPING MACHINE

MODEL 100 centerless lapping machine is announced by Size Control Co., Division of American Machine & Gage Co., 4638 W. Fulton St., Chicago, Ill., for precision finish of cylindrical machines. Finish of less than 2 micro inches is easily obtained with machine and lapping time is said to be greatly reduced. Pieces can be lapped without necessity of making set-ups, or using ring laps or other tools. Model is furnished complete. Bulletin 446 describes it.

TIRES RESIST OILS GREASES BRINE

INDUSTRIAL tires made with synthetic rubber compound said to resist the destructive action of oils, greases and salt brine, and which are said to have less rolling resistance than tires of regular construction made of either natural or GR-S synthetic rubber, are announced by the B. F. Goodrich Co., Akron, Ohio. Tires are also said to have more resistance to cutting and chipping.

HIGH SPEED BENCH DRILL

LIGHTWEIGHT, high speed bench drill for ⅛" drills and smaller, is announced by The Dumore Co., 70-16th St., Racine, Wis. It is designed for use in the fabrication of small parts of metal, wood or plastic items. Power is supplied by a 1/30 hp motor with a range of 2,000 to 15,000 rpm. Speed is controlled by foot rheostat permitting free use of both hands. Drill weighs 15 pounds.

CRANE CAB AIR CONDITIONER

AN air-cooled conditioning unit for crane cabs working over ingot molds, soaking pits or vats where acid or other fumes are present is available through the Machinery Division of Dravo Corp., 300 Penn Ave., Pittsburgh, Pa. The self-contained unit fits on top of cab. Air supplied to the cab is cooled, cleaned and constantly circulated. Dust and smoke are dissipated, and acid fumes eliminated by special fume absorber. Bulletin 515 describes unit.

TRIGGER-TOUCH EXTINGUISHER

NEW trigger-touch 15 lb. CO_2 extinguisher that is carried and operated with uninterrupted, single-sweep action, is announced by Randolph Laboratories, 8 E. Kinzie St., Chicago, Ill. Touch of thumb-trigger discharges penetrating blanket of carbon dioxide gas. Truck and wall brackets are provided for both vehicle and factory installation.

NEW SPRING LOCK WASHERS

THE Reliance Division of Eaton Mfg. Co., Massillon, Ohio announces a complete line of spring lock washers produced in compliance with the standards adopted by American Standards Assoc. Company guarantees to meet both ASA and SAE specifications. Washers are available in light, medium, heavy and extra heavy series.

WET BELT SURFACER

AN improved wet belt surfacer which surfaces, grinds and removes stock by means of an abrasive belt with greatly improved output is announced by Porter-Cable Machine Co., Syracuse, N. Y. New surfacer, Model BG-8, is said to offer high production, close tolerance performance and superior finish. It eliminates warpage, discoloration and burrs. Automatic feed table assures tolerance accuracy or .0005". Working area offers table 11¼" x 24½".

REMOVABLE SLAT VENETIAN BLIND

VENETIAN blind from which slats can be easily removed or replaced, without removing blind from the window, is marketed by Rupert H. Noye, 2323 South Michigan Ave., Chicago 16, Ill. Cord arrangement is said to permit complete closure of the blind. Slats are not drilled through center, being notched on opposite edges only. Blind is available of wood, steel or aluminum slats.

BATTERY CHARGER-WELDER

COMBINATION battery charger and arc welder has been developed by Hobart Bros. Co., Motor Generator Corp., Div., Troy, Ohio. It is said to be adaptable to a wide variety of shops where batteries are charged and electric arc welding is done. Two separate control panels with instruments (one for battery and one for welding circuit) make switching easy.

(Continued on page 140)

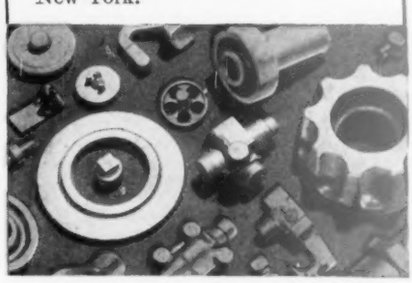
Scovill NON-FERROUS FORGINGS

When SCOVILL becomes your METAL-PARTner QUALITY GOES UP, COSTS STAY DOWN ON CHROME-PLATED PARTS like these.

BEFORE SCOVILL: This base part of a surgical instrument was formerly made from sand castings. Grinding and buffing costs ran high and defects uncovered by these finishing operations caused about 10% rejections. Complaints about the inability of the chrome plating to stand up under repeated sterilization were serious.

AFTER SCOVILL: With Scovill forgings, the customer saves approximately 6¢ per piece in finishing costs alone, reduces rejects to zero. And because the dense structure that results from forging permits better chrome plating, the customer has an improved product at lower cost.

TALK IT OVER WITH SCOVILL. Maybe your brass, aluminum or other non-ferrous metal parts can be improved in quality or lowered in cost by a similar change to another method or design. Our long forging experience may be of value to you. Investigate whether you, too, can benefit from making Scovill *your* METAL-PART*ner*. Fill in the coupon and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn. *Export Department:* 405 Lexington Ave., New York 17, New York.



Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
- ☐ Cameras
- ☐ Communication Equipment
- ☐ Compressed Gas Cylinders
- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
- ☐ Pumps
- ☐ Valves
- ☐ Welding Equipment

Other applications.....

.....

SCOVILL MANUFACTURING COMPANY
Forgings Division
21 Mill Street
Waterbury 91, Connecticut

Name .....

Company .....

Address .....

Cuts 12 gauge hot-rolled steel any shape... interior or exterior easy as cutting out paper dolls

Stanley UNISHEAR 144A

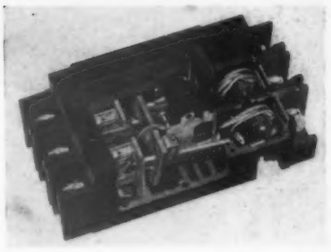
You can short-cut dozens of heavy sheet metal jobs every month with this portable tool that does a shop job right on the job. Cuts clean – curves, straight lines, angles and notches – right to the line in heavy 12 gauge hot rolled steel and heavier gauges of softer metals . . . at speed up to 15 feet per minute. Trims turned up edges close to the surface. Makes inside cuts from a 3″ starting hole. Light and easy to handle. Interchangeable, easily sharpened blades.

You need the money this UNISHEAR can save you. Ask your distributor for a demonstration or write for full information. Stanley Electric Tools, New Britain, Conn.

STANLEY
Trade Mark

STANLEY UNISHEARS
Electrically Driven Metal Shears

CIRCUIT BREAKER

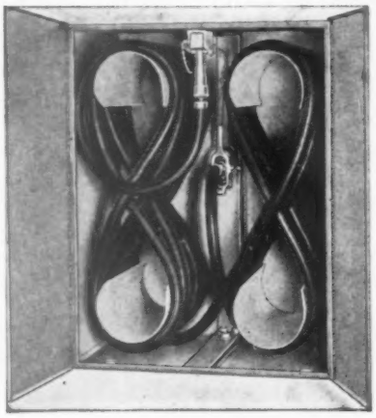


ANNOUNCEMENT is made of new ML2 100 ampere frame circuit breaker by Square D Company 6060 Rivard St., Detroit 11, Mich. Ratings are 15 to 100 amperes — 600 volts a-c, 50 to 100 amperes 250 volt a-c d-c, 2 an 3 pole. Breaker is also furnished for panel boards. Descriptive bulletin CA-3500-ML2B available.

IMPROVED STAINLESS STEEL ELECTRODES

TWO improved electrodes for shielded arc welding of stainless steel, known as "Stainweld A7" and "Stainweld A7-Cb," have been announced by Lincoln Electric Co., Cleveland, Ohio. They are made for welding steels of the 18% chromium and 8% nickel type in all positions, and are recommended for weld-surfacing where an austenitic surface of medium hardness and good corrosion resistance is required. Properties of all-weld metal specimen (average for various sizes of electrodes) are: tensile strength, 85,000-95,000 lbs. per sq. in., elongation is 2"—35%-50%.

FOUR-SECOND FIRE FIGHTING



FOUR-second fire fighting is said to be possible with new fog unit announced by Bowser, Inc., 1306 E. Craighton Ave., Fort Wayne, Ind. Two models are available, Model 1030 having a shorter hose and smaller cabinet than Model 1033 which has 100 ft. of one-inch hose. Unit is connected directly to water line. Valve actuating fixture holds fog nozzle for instant use and fog appears at the nozzle within four seconds after reaching for hose. Automatic valve releases spray to full capacity instantly upon removing nozzle.

(*Continued on page* 142)

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*

This system of Buckeye conduit, installed in a large department store a generation ago, still provides dependable wiring protection to owners and tenants.

RACEWAYS to lasting safety

WHEN you're planning wiring systems for the buildings of tomorrow, safety is naturally a first consideration. Not only safety, but *permanent* safety!

The electrical industry has long since agreed--and incorporated it in the national code--that the one safest system for the lasting protection of electrical wiring is that employing heavy-wall steel conduit. This is the only system approved for use in hazardous locations and occupancies, as being dependably moisture, vapor, dust, and explosion proof.

So for positive protection, install permanent raceways of full-weight, rigid steel conduit--"Buckeye" conduit. Wiring is easily changed to meet changing day-to-day needs, yet the conduit remains in place, as raceways to lasting safety.

Youngstown "Buckeye," the world's most widely used standard-threaded, full-weight, rigid steel conduit, is sold by leading distributors in all markets.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

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CARBON - ALLOY AND YOLOY STEELS

Ask your distributor for:
Youngstown Buckeye Conduit...Pipe and Tubular Products...Sheets...Plates...Electrolytic Tin Plate...Coke Tin Plate...Bars...Rods...Wire...Tie Plates and Spikes.

require fewer replacements cost less per year of service

In every respect—quality of materials, advanced design, finest precision workmanship—Lunkenheimer Valves are built to provide longer as well as more efficient and reliable service.

One or two new parts at long intervals make a correctly engineered, ruggedly constructed Lunkenheimer Valve as good as new. All Lunkenheimer parts are precision-made . . . perfectly matched . . . requiring no special fitting on the job.

Thus, when you install Lunkenheimer Valves you can look forward to purchasing fewer replacement valves . . . and to easier, lower-cost replacement of present valves with parts quickly obtainable from your nearest Lunkenheimer Distributor.

Remember—in utmost economy plus superior efficiency, Lunkenheimer products offer you greater value per valve dollar.

See Your LUNKENHEIMER DISTRIBUTOR for Needed Parts . . . Better Valve Service!

Lunkenheimer Distributors are located in principal industrial centers. They are important links in the Lunkenheimer chain of better, more efficient valve service—service that can save you time, trouble, and money.

THE LUNKENHEIMER COMPANY

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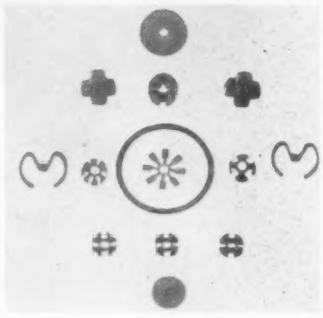
EXPORT DEPARTMENT: 319-322 HUDSON ST., NEW YORK 13, N. Y.

THREAD & GASKET SEALING COMPOUND

UNISEAL is name of general-purpose thread and gasket sealing compound developed by Parker Appliance Co., Cleveland. It develops seal which is said to be proof against air, water, steam, gas, gasoline, oil, hydraulic fluids, and the aromatics. It is a uniform paste containing no free metallic particles. Flows smoothly to form ribbon gaskets, and blends readily with cut gasket material. It is said to be 100% effective under severe conditions of vibration and at temperatures above 300 deg. F.

PERMANENT MAGNET MATERIALS

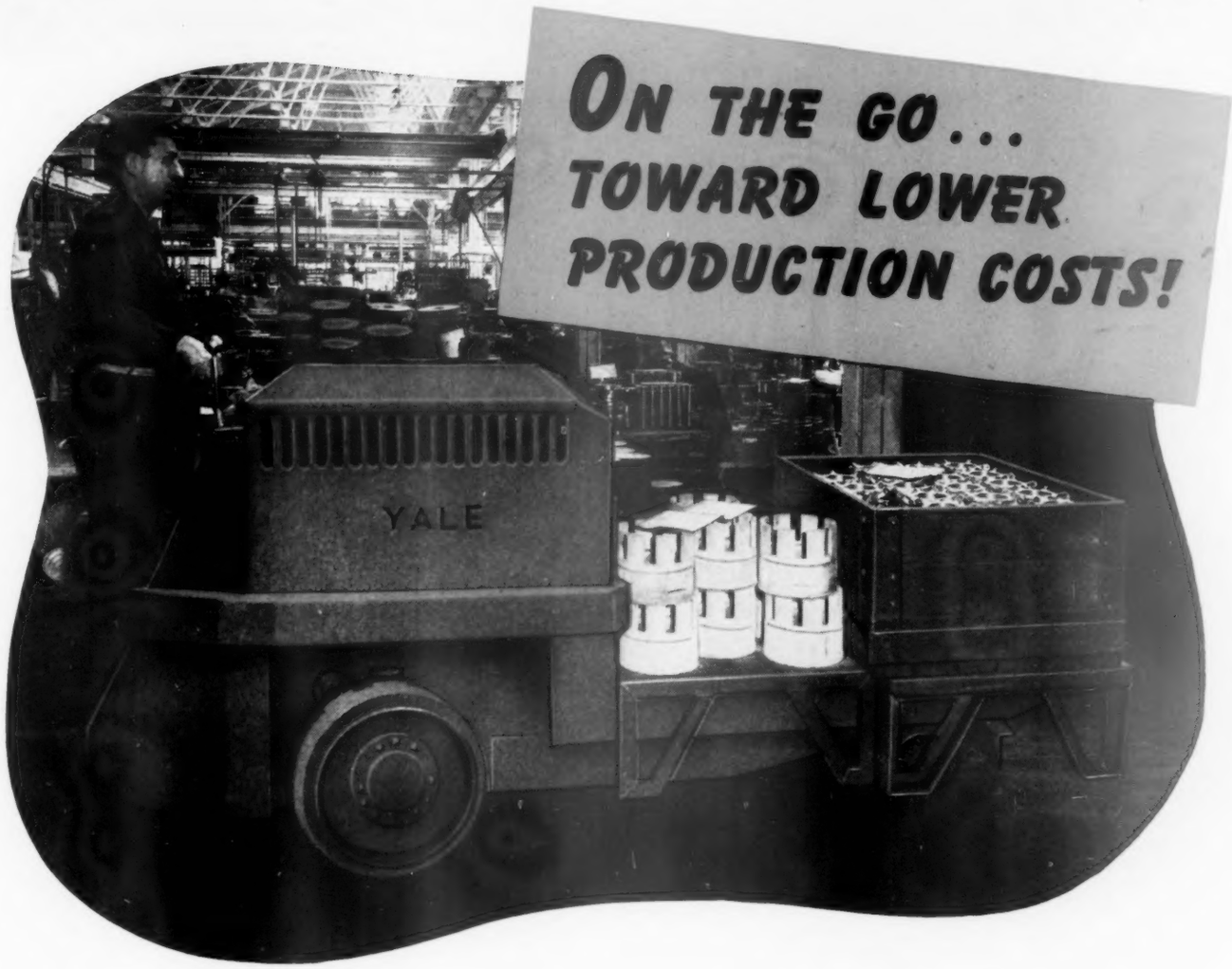


FIVE new permanent magnet materials known as cunico, cunife, vectolite, alnico 12 and silmanal are announced by General Electric Co. They have many applications where small, lightweight magnets formed in intricate shapes are required. Cunico is a malleable, ductile and machinable alloy of copper, nickel and cobalt. Cunife is a copper-nickel-iron alloy which has all the physical properties of cunico. Cunife wire can be flattened to make thin, narrow shapes. Vectolite is a hardened combination of iron rust and cobalt oxide and is said to be the first non-metallic, non-conducting magnet material ever made. The magnets are extremely light. Alnico 12 is made up of aluminum, nickel, cobalt, iron and titanium; magnets are cast and must be ground to shape. Silmanal is ductile and malleable and can be punched, machined, rolled or ground. It can be made in rod, strip or wire form. Illustration shows complex shaped cunife and cunico magnets.

CROMOVAN PRODUCTION DIE STEEL

CROMOVAN is name of production die steel announced by Firth-Sterling Steel Co., McKeesport, Pa., which is said to have extraordinary qualities and is recommended for dies when the output desired runs into hundreds of thousands. Applications include cutting and forming dies, such as trimming, blanking, stamping, cold forming, extrusion, etc. It is also recommended for some types of punches, reamers, taps, spinning tools, etc. It is featured by intense hardness, unusual depth of hardness, high resistance to abrasion and good machinability.

(*Continued on page* 144)



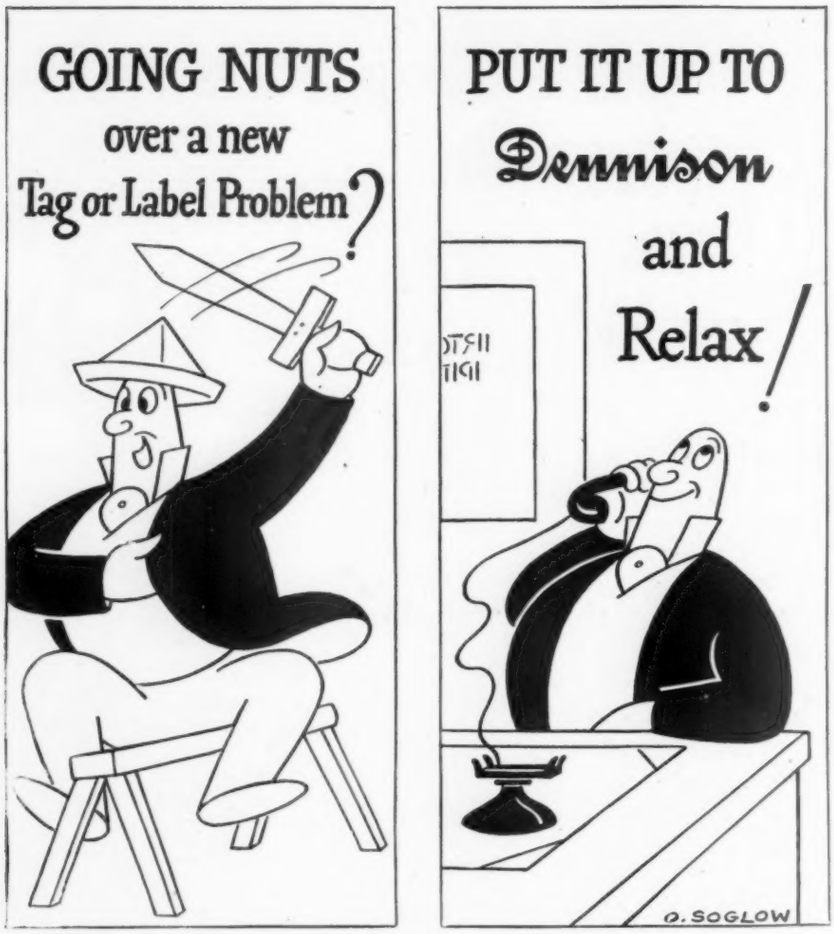
This Yale Electric Low-Lift Platform Truck is speeding parts to production. Large pieces ride safely on a skid, small ones in a skid bin. Unit load or multi-unit load, this powerful truck lifts and shifts material in a hurry. It picks up weights requiring the combined strength of many men . . . "delivers the goods" at a speed muscle power cannot match. Here's cost-cutting in a big way! Here's extermination of *muscle money*—those extravagant costs which pile up wherever old-fashioned material handling methods rule the flow of production.

Raw materials, goods in process, articles for storage or shipping . . . you can depend on fast, efficient Yale Material Handling Machinery to help you speed handling, lower production costs, economize on storage space, conserve worker energy . . . ride *muscle money* clear out of your production picture.

Get full details about the many advantages of Yale Material Handling Machinery. Phone our nearest representative, or write to us direct.

The Yale & Towne Manufacturing Company
4530 Tacony Street Philadelphia 24, Pa.

YALE
MATERIAL HANDLING MACHINERY
CUTS PRODUCTION COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY
HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES



THE current trend towards letting the merchandise speak for itself in retail stores gives new importance to point-of-sale tags and labels. In solving this problem, you will save a lot of wear and tear on yourself by putting it up to Dennison first.

Dennison's experience in producing informative labels and talking tags covers practically every type of product manufactured. We can give you valuable tips on making tags and labels that are distinctive, catch the eye, and strike a strong buy-now note.

In addition, Dennison recommendations include practical advice on the best way to affix tags and labels to your product. For example, among the many Dennison methods of attaching tags are our new Snap-Lok and barb fasteners, as well as button-slot or special tongue-slot constructions.

Remember, too, that you do not have to pay a premium price for experience and know-how when you put your problem up to

Dennison

PAPER PRODUCTS THAT PRODUCE RESULTS

FREE — ILLUSTRATED BOOKLET — Our booklet *"If You Could Only Be At Every Point Of Sale"* is full of practical information on how to make your product more salable through correctly designed tags and labels. Just fill in and mail coupon and we shall be glad to *rush* a copy to you.

TAGS · LABELS · SEALS · SET-UP BOXES · MARKING SYSTEMS · PAPER SPECIALTIES

Dennison Manufacturing Company
679 Ford Ave., Framingham, Mass.

Please send me without obligation, booklet "If You Could Only Be at Every Point of Sale."

Name.....
Firm.....
St. & No.....
City.....Zone.....State.....

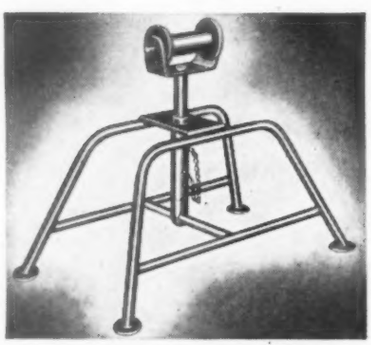
ADJUSTABLE COUNTERBORE KIT

SET of four adjustable counterbore spot facers with exceptional cutting range is announced by Robert H. Clark Co., Beverly Hills, Calif. Maker states set saves production time, save space, and cuts tool inventory cost. The four tools cut any fractional or decimal diameter with ¼" to 1⅜" O.D. Set also contains assortment of 11 extra pilots. Cast alloy blades are available.

TWO NEW COPPER WIRE TESTERS

TWO new low-stress elongation testers for measuring the stiffness, or springiness, of large and fine copper wire, are announced by the General Electric Co. The large-wire tester measures elongation of wire from 17.9 to 80.8 mils in diameter, and the portable fine-wire instrument tests wire from 3.1 to 17.9 mils in diameter. They are useful for determining whether a wire has proper degree of flexibility for certain winding processes, and make possible a comparison between wires of the same or different sizes on basis of elongation.

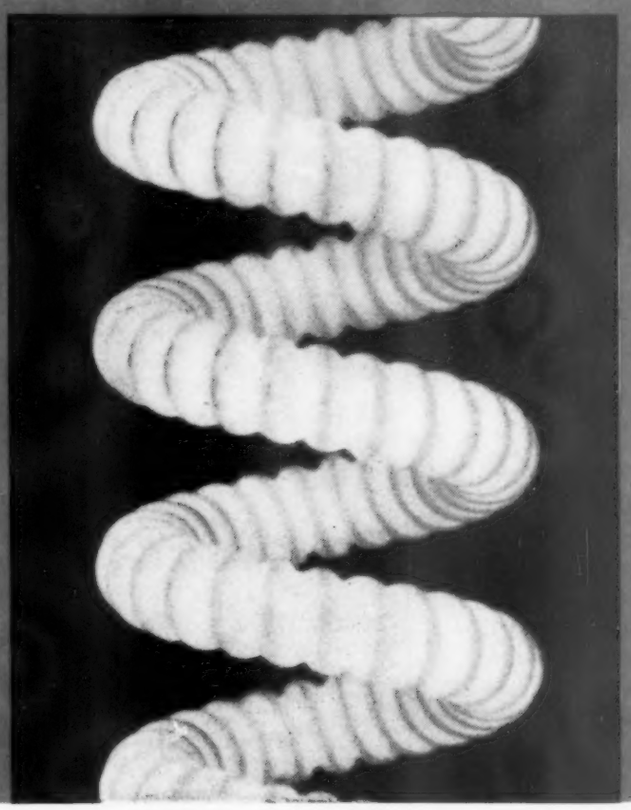
CONVEYOR FOR PIPES, BARS



THIS is Herculean roller conveyor for conveying pipe, tubes, rods and bars, announced by John Moore Specialty Co., 6130 N. Hiawatha Ave., Chicago, 30, Ill. It can be used as a single unit or in line, tandem fashion. Adjustable swivel center post raises roller to height over all of 51". Minimum height is 38½". Unit handles up to 12" pipe. Built of tubular stock, each unit weighs 81 pounds.

(*Continued on page* 146)

How to buy Fluorescent Lamps like an Expert:

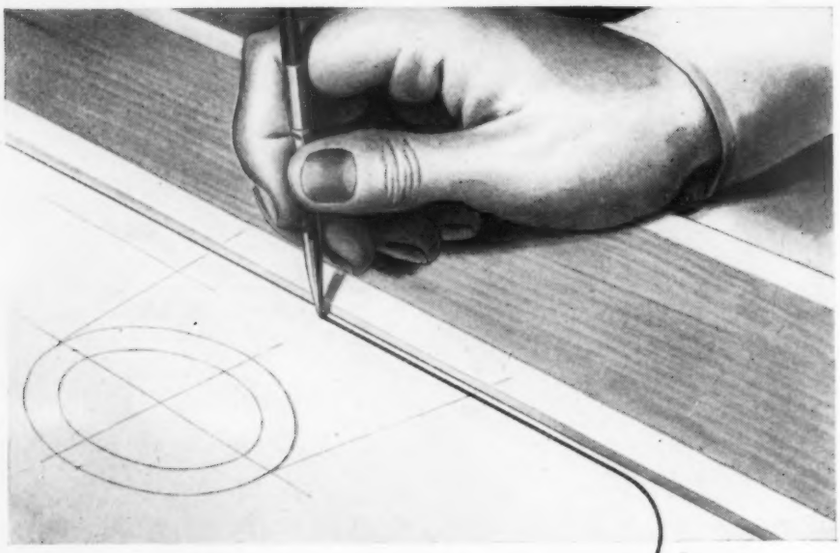


1 ***You Could Spend a Lifetime*** becoming an expert on fluorescent lighting. One good start would be to retrace the ground General Electric research men had to cover in developing the coiled-coil tungsten cathode, shown above 20 times actual size. It's this cathode that starts and maintains the electron flow inside a fluorescent lamp. First, G-E lamp men had to find a way to make tungsten wire, a feat never achieved before. Then they figured out how to coil this stubborn metal, and then coil the coil. To be an expert in your own right, you'd have to be familiar with such techniques. You'd also have to master hundreds of other fields ranging from glass blowing to electronics. Actually, of course, no one man could do it all. But there's an easy answer . . .

2 ***You Can Insist on the GE Mark*** on all the lamps you buy. In other words, let G-E lamp research men be your experts. As the people who produced the first practical fluorescent lamps, General Electric has continued to lead the field with the newest improvements. *Today, G-E lamp research is constantly at work to make G-E lamps ever better and to make them Stay Brighter Longer!

G-E LAMPS

GENERAL ELECTRIC



The little line that's all there

When a line is ruled on Arkwright Tracing Cloth, the ink flows like molten lead, and "freezes". It's all there. Make a mile of lines and you'll never strike a place where the cloth refuses to take ink.

This feature of Arkwright Cloths saves time, and time means money.

Arkwright's transparency saves time, too. A draftsman can *see*, easily and accurately. It is permanent, because transparency is achieved by mechanical processing, not by the use of surface oils. It doesn't become opaque with age.

Arkwright's freedom from imperfections saves time, money, and bad tempers. There are no nibs to trip a pen; no dirt, no stains. There are no pin holes, first or last. Repeated erasure never results in a feathered line.

Executives, purchasing agents, and draftsmen; all are interested in saving time, money, or both. To them samples are sent gladly. Write to Arkwright Finishing Company, Providence, R. I.

★

Sold by leading drawing material dealers everywhere

★

Arkwright

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

TOTE BOX HANDI-ROLLER

Tote box Hand-Roller marketed by Rolock Inc. of Fairfield, Conn., consists of dolly-like metal frame that holds two sets of ball-bearing rollers, one on which the load rests, and another set for rolling the load. A traction-hook fits through one of series of holes in handle. This is slipped into box handle, and by pulling on Handi-Roller handle box is easily pulled onto rollers.

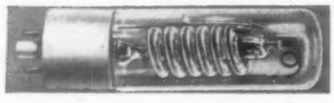
SPINNER RIVETER

NEW spinner-riveter, the Keyn "Airflex," for all types of cold headed assemblies and especially adaptable for use in assembly work on plastics, fibre, canvas and insulating materials, is announced by Plymouth Engineering Co., Plymouth, Ind. Machine has adjustable spindle regulator for precise control of riveting force under maximum speed, which is claimed to increase scope of uses for cold heading on ductile and brittle materials.

BLACKMER ANNOUNCES "LOW SWING" STRAINER

NEW Low-Swing strainer is announced by Blackmer Pump Co., Grand Rapids, Mich. It is featured by use of perforated metal, steel or bronze, instead of wire screen for the strainer basket; quick removal of basket for cleaning; compact design which permits mounting in small space; design of strainer for flange mounting. Present production is limited to a capacity of 100 GPM with 2″, 2½″, and 3″ intake and discharge sizes. Maximum operating temperature is 600 deg. F. Maximum pressure is 75 psi.

REPEATING FLASH BULB



REPEATING flash bulb, that can be used for thousands of individual flashes of brilliant daylight quality for photographic illumination, has been announced by the Wabash Photolamp Corp., 335 Carroll St., Brooklyn, N. Y. Bulb provides light output of 12,000,000 peak lumens in an instantaneous flash the equivalent of 1/5000th second. Color quality has been corrected to approximate normal daylight. Portable electro-flash units to fire bulb will soon be available.

(*Continued on page* 148)

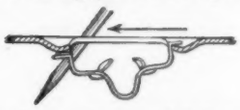
SHAKEPROOF ANNOUNCES THE Q-TWO FASTENER

A SIMPLIFIED QUICK-OPERATING CLOSURE DESIGNED FOR GENERAL INDUSTRIAL USE

...Consisting of only three parts

...That opens or locks with ¼ turn

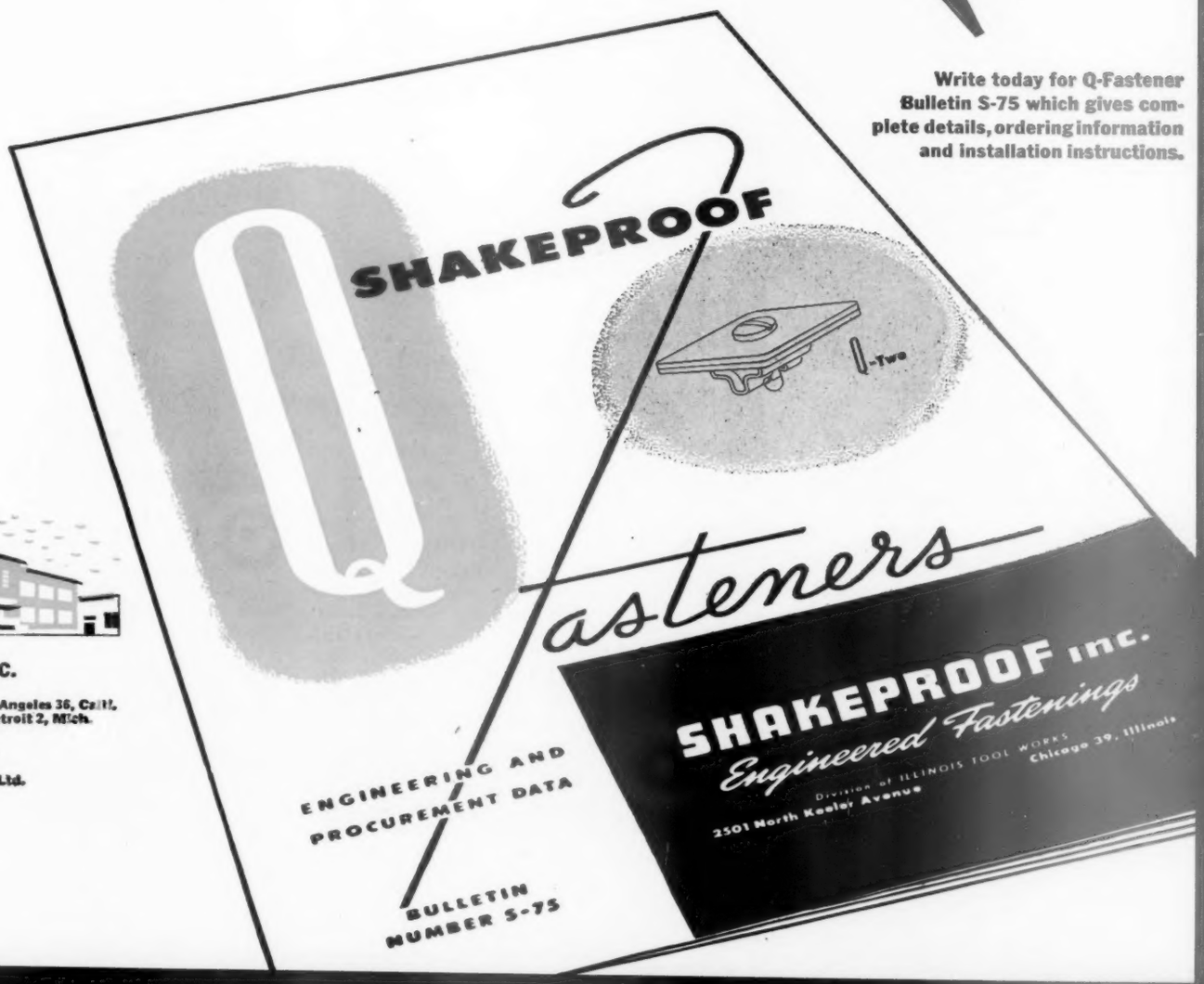
...That can easily be snapped into place in prepared sheets



...That compensates for sheet thickness variation +/—0.025 and for variation in alignment up to ⅛ inch

...And is considerably lower in purchase and installation costs than riveted aircraft cowl fasteners

Write today for Q-Fastener Bulletin S-75 which gives complete details, ordering information and installation instructions.



SHAKEPROOF INC.
Engineering Offices:
633 S. Labrea Ave., Los Angeles 36, Calif.
2895 E. Grand Blvd., Detroit 2, Mich.
Plants:
Chicago and Elgin, Ill.
In Canada:
Canada Illinois Tools, Ltd.
Toronto, Ontario

Economize WITH POWERS

TEMPERATURE REGULATORS

Use a Powers No. 11 Temperature Indicating Regulator when you want the advantages of an easy-to-read dial thermometer combined with a dependable self-operating regulator. The dial thermometer gives a visual check on the performance of the regulator and makes it easy to adjust for the required operating temperature. Various dials and ranges are available.

Is Easy To Install—because both the thermometer and the regulator operate from the same thermal system—only one tapped opening is required.

Write for Circular 2511

THE POWERS REGULATOR CO.
2792 Greenview Avenue, Chicago 14, Illinois
231 E. 46th St., New York 17, N. Y.—Offices In 47 Cities . . . See your phone directory.
70

OVER 50 YEARS
OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL

SHOCK RESISTANT PLASTIC

THERMO-SETTING, shock resistant plastic in color is announced by American Cyanamid Co., 30 Rockefeller Plaza, New York City. The compound, a rag-filled melamine-formaldehyde, Melmac 3020, molding material, is said to combine strength with excellent electrical and chemical resistance properties. It is available in a range of standard colors. Suggested uses are for washing machine agitators, vacuum cleaner housings, syrup dispensers (see illustration), shock resistant food trays, and many other commonly used items.

STUB SCREW MACHINE DRILLS

STURDY stub drills, made with short flutes and heat treated to assure maximum tool life between grinds, have been introduced by Chicago-Latrobe Twist Drill Works, 411 W. Ontario St., Chicago 10, Ill. They are recommended for hand and breast drills, as well as screw machines. Full range of wire gauge from #1 to #60, letter sizes A to Z, and fractional sizes from 1/16" to 2" available. Literature available.

SAFETY TREADS

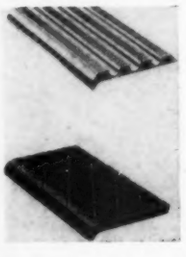


ILLUSTRATION shows Wooster safe groove tread and abrasive cast tread, marketed by Wooster Products, Inc., Wooster, Ohio, the two types meeting varying service conditions. Abrasive cast treads are made in four different cast metals — iron (Ferrogrit); aluminum, (Alumno grit); bronze, (Bronzo-grit); nickel, (Nidklogrit); in plain, cross-hatched, or fluted patterns. Safe groove treads are made of steel, yellow brass, or white alloy bases, with lead or abrasive grit fillers.

TORNOS PRECISION SWISS AUTOMATICS

TORNOS high-precision Swiss automatics for producing complicated ultra-precision parts for watches, clocks and fine instruments are available and will be serviced in the U. S. by Wickman Corp., 15533 Woodrow Wilson Ave., Detroit 3, Mich. They are available in 7 sizes with capacities from 5/32" to 1 3/16" diameter. Similar machines for precision wood screws also available.

NEW WYCO HY-SPEED SAW

ATTACHED to any ¼" electric drill, air drill or flexible shaft, the new Wyco Hy-Speed saw is said to saw true and file metals, wood and plastics. It chucks in drill chuck or collet, uses ordinary hack saw blades and standard ¼" shank machine files. True sawing is said to be assured by new square plunger with takeup for wear. Printed matter available from Wyzenbeek & Staff, 838 West Hubbard St., Chicago 22, Ill.

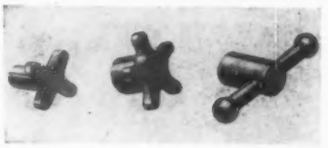
MOTOR GENERATOR INDUSTRIAL TRUCK CHARGER

AUTOMATIC motor generator set for direct current charging of motorized truck batteries in either lead-acid or nickel - iron types, is announced by Motor Generator Corp., Division of The Hobart Bros., Troy, Ohio. The generator is a 15-16 volt, D.C., 50 amp ¾ kw diverter pole type built as an integral unit with a 3-phase a-c 220/440 volt, 60 cycle, 1½ hp squirrel cage induction, ball bearing motor. It is designed for the modified constant voltage charging of one 6-cell 250 amp hr battery in eight hours.

RECLAIMS PAINTS VARNISHES LACQUERS

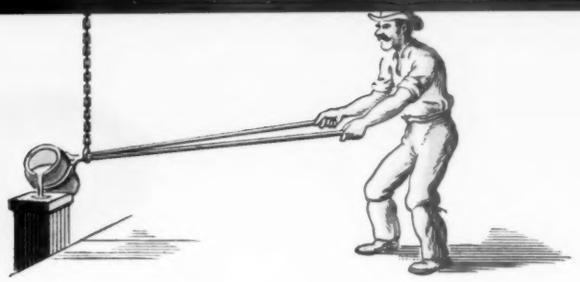
PROCESS for the reclamation of waste paints, lacquers, and varnishes, is announced by the Meckler Chemical Corp., 3748 E. 91st St., Cleveland, Ohio. Process converts sludge into finishes, such as sludge from water-curtained spray booths, and involves extraction of water, mixing, addition of solvents, emulsification, grinding, straining, final grinding and final mixing to produce an oil-in-water emulsion. Process is available on license.

HAND KNOBS



THREE new types of hand knobs for machines, fixtures and other uses are announced by Machine Products Corp., Detroit, Mich. These knobs are cast iron and are available machined or unmachined. The four-star design is available in 6 sizes; the 5-star in 2 sizes, and the "T" handle in 2 sizes. Hand wheels are available in rough castings or machined, with or without polished steel handles. Catalog on request.

(*Continued on page* 152)



Brass-making has been our business for more than 100 YEARS

Yes, we've seen a lot of changes in the brass industry in our century and more of experience, and not the least of them was in the casting of the metal . . . from the small, manually handled, coal-fired crucibles of not too long ago, to the present electric induction furnaces skillfully manipulated through overhead hoists and pouring tons of metal in copper-lined, water-cooled molds.

Producing copper, brass, bronze, nickel silver and other copper base metals that will fully and economically meet your manufacturing requirements and the service standards of your product is the result of a far-reaching program of planned research and the step by step metallurgical control of both metals and methods—from "mine to consumer."

Today The American Brass Company is Industry's most coordinated and largest supplier of copper and copper alloys in the form of sheet, wire, rods, tubes and other shapes. Its facilities for serving you are outlined on the following page.

THE AMERICAN BRASS COMPANY
***General Offices:* Waterbury 88, Connecticut**

SERVING INDUSTRY'S NEEDS FOR

Copper, Brass & Bronze

10 MANUFACTURING PLANTS

5 WAREHOUSES

27 OFFICES AND AGENCIES

PLUS A NETWORK OF DISTRIBUTORS THROUGHOUT THE NATION

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ANSONIA, CONNECTICUT
BUFFALO, NEW YORK
DETROIT, MICHIGAN
KENOSHA, WISCONSIN
TORRINGTON, CONNECTICUT
WATERBURY, CONNECTICUT (4)
NEW TORONTO, ONTARIO

WAREHOUSES

CHICAGO 7, ILL.	1326 West Washington Blvd.
CLEVELAND 14, OHIO	2906 Chester Avenue
MILWAUKEE 4, WIS.	1033 West Bruce Street
PHILADELPHIA 22, PENN.	111 West Norris Street
PROVIDENCE 3, R. I.	200 Chestnut Street

OFFICES AND AGENCIES

ATLANTA 3, GEORGIA	66 Luckie Street
BOSTON 10, MASSACHUSETTS	140 Federal Street
BUFFALO 5, NEW YORK	70 Sayre Street
CHICAGO 7, ILL.	1326 West Washington Blvd.
CINCINNATI 2, OHIO	101 West Fourth Street
CLEVELAND 14, OHIO	2906 Chester Avenue
DENVER 2, COLORADO	818 Seventeenth Street
DETROIT 31, MICHIGAN	174 South Clark Avenue
HOUSTON 2, TEXAS	1605 Commerce Building
KENOSHA, WISCONSIN	1420 Sixty-Third Street
LOS ANGELES 13, CAL.	601 West Fifth Street
MILWAUKEE 4, WIS.	1033 West Bruce Street
MINNEAPOLIS 2, MINN.	527 Marquette Avenue
NEWARK 2, NEW JERSEY	744 Broad Street
NEW YORK 4, NEW YORK	25 Broadway
PHILADELPHIA 22, PENN.	111 West Norris Street
PITTSBURGH 12, PENN.	1228 Brighton Road
PROVIDENCE 3, R. I.	200 Chestnut Street
ROCHESTER 4, N. Y.	183 Main Street, East
ST. LOUIS 2, MISSOURI	408 Pine Street
SAN FRANCISCO 4, CAL.	235 Montgomery Street
SEATTLE 1, WASHINGTON	1338 Fourth Avenue
SYRACUSE 2, N. Y.	507 State Tower Building
WASHINGTON 5, D. C.	1511 K Street, N. W.
WATERBURY 88, CONN.	414 Meadow Street
MONTREAL, QUEBEC	939 Dominion Square Bldg.
NEW TORONTO, ONTARIO	Eighth Street

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY *General Offices:* Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company • *In Canada:* ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.* 46155

ASBESTOS IN ACTION

Structural materials that always stay young...

K&M "Century" FLAT ASBESTOS-CEMENT SHEET MATERIALS

Design and construction by the Austin Company

• For rugged strength and staying-power, K&M "Century" Flat Asbestos-Cement Sheet materials are unbeatable. K&M Standard Asbestos Lumber and K&M Monobestos are two such products that grow *tougher* with age, never need maintenance, and practically last forever.

The most recent addition to the "Century" Flat Asbestos Sheet family is K&M "Century" APAC—a sturdy, light-weight material that's highly resistant to the common enemies of most building materials. Fire, rodents, termites, weather, rot . . . APAC withstands them all, and seems to stay eternally young. Its 4′ x 8′ sheets are ideal for many types of industrial construction, such as walls, partitions, ceilings, elevator shaft linings—in fact APAC has as many uses as a building has surfaces.

K&M "Century" Flat Asbestos Sheet Materials hold the right answer to many construction problems. Write to us for full information on what they can do for YOU.

K&M best in asbestos

Nature Made Asbestos...
Keasbey & Mattison has been making it serve mankind since 1873

KEASBEY & MATTISON
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Get full time from your trucks

by "Strategic Spotting"

of these

G-E BATTERY CHARGERS

You can be sure of a full day's active work from every one of your industrial trucks by installing G-E copper-oxide chargers right in the areas of use. They require little space, are compact and self-contained. Automatic operation provides easy, fast, economical charging. G-E Chargers are right for "strategic area" service. And a local installation is always ready to give batteries a Noon-hour boost to maintain working efficiency.

Entirely automatic, G-E copper-oxide chargers are simple to use. Your driver sets the control and the charger takes over to finish the job, cutting out when charge is complete. There's no danger of overcharging.

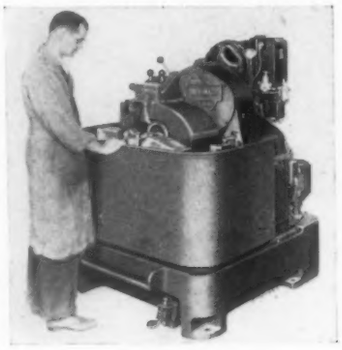
G-E copper-oxide chargers for lead-acid, for nickel-alkaline, and for combination use are priced low and are made in capacities to meet your plant needs. For illustrated booklet and complete information, write General Electric Company, Appliance and Merchandise Department, Section A667-77, Bridgeport, Connecticut.

GENERAL ELECTRIC

ONE BALL FOR ALL SIZE VALVES

TOILET tank flush ball with neoprene rubber base, polystyrene plastic top and expandable plug that fits all size valves is announced by the Rayco Co., New Haven 11, Conn. Rubber base is so molded as to insure uniform wall thickness. The plastic top prevents rubber from collapsing from steady use. The expandable plug used as connection to the lifting rod is said to eliminate stripping of threads.

AUTOMATIC CHUCKING MACHINE



HEAVY duty, high production machining operations on castings, forgings and tubing parts up to 12 inches in diameter can be effectively performed on new single spindle automatic chucking machine announced by The National Acme Co., 170 E. 131st St., Cleveland, 8 Ohio. Is known as the "Chuck-Matic" and is designed for straight, internal or taper boring, form turning or form boring, external turning, forming, facing and chamfering. It is built to accept all-carbide tooling. Machine is 64 in. long, x 45 in. wide x 64 in. high. Cutting cycles are powered by a 15 hp motor with a 2 hp motor being used for high speed clearance movement of the toolslides.

COMBUSTIBLE GAS ALARM SYSTEM

COMBUSTIBLE gas alarm system, remote head type, designed to detect the presence of combustile vapor and/or gas, give an audible signal before mixture with air becomes dangerous, and control appliances such as shutting down machines, starting ventilating, etc., is announced by Davis Emergency Equipment Co., Inc., 45 Hallock St., Newark 4, N. J. Control cabinet may be located at any distance in a gas-free area. Signal of changes reaches control cabinet through electric cable. Machines can be shut down ventilation may be started or increased, fire prevention such as CO_2, foam or other extinguishing systems can be actuated. Any function may be performed which is made possible by opening or closing an electrical circuit. Any number of analyzer heads can be employed. Approved by A.F.M.L.

(*Continued on page* 154)

Nylons ARE BACK ! . . . and in Mason Boxes

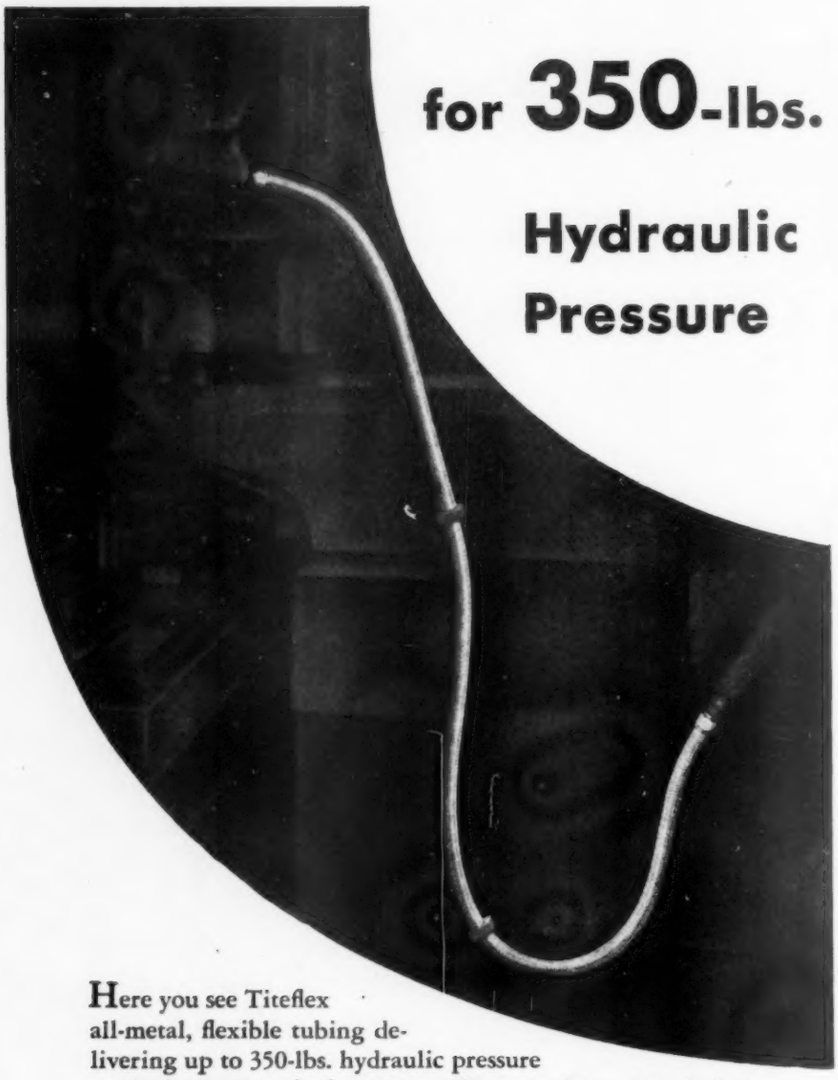
Lucky girl! She has just received a brand new pair of exquisite nylons through the mail . . . and they probably came in a Mason box.

Many retail stores and some hosiery manufacturers team together to make the most equitable arrangement for early distribution on nylon hose. It was a coupon order system which permitted store customers to get early delivery on precious nylons, and thanks to a standard Mason box which permitted ease of packing, labeling and shipping, the nylons went out all over the country. Thousands of economical uses for these handy MailMasters make them an economical must in your mailing, shipping and distribution departments. Write today for new catalog, to Dept. 24, The Mason Box Company, Attleboro Falls, Mass.

The MASON BOX COMPANY

MANUFACTURERS OF AMERICA'S NUMBER ONE BOX . . . THE MASON MAILMASTER

PRESSURE-TIGHT **FLEXIBILITY**



Here you see Titeflex all-metal, flexible tubing delivering up to 350-lbs. hydraulic pressure to the business end of a giant milling machine. Installed in the hydraulic mechanism which imparts both vertical and horizontal movement to the cutting head, Titeflex has the inherent tightness and flexibility to withstand surging pressure... constant flexing.

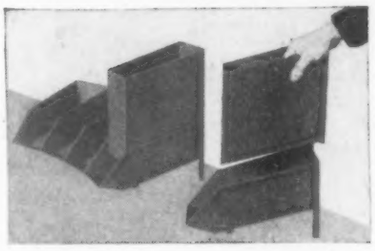
Similarly, Titeflex gives the same trouble-free performance in no end of applications calling for the conveyance of gases and liquids under extreme temperatures, continued vibration and corrosive attack.

Investigate now the increased operating efficiency and economies which accrue from the use of Titeflex conduits. Our application engineers stand ready to work with you on any specific installation problem. Titeflex, Inc., 533 Frelinghuysen Avenue, Newark, New Jersey.

Titeflex

THE ALL-METAL FLEXIBLE TUBING THAT STAYS TIGHT

HOPPER SAVES BENCH SPACE



NEW hopper for its assembly bins, developed by Stackbin Corp., Providence, R. I., is claimed to effect a 75% cut in travelling back and forth to replenish parts. The new hopper increases assembly bin capacity nearly 4 times. • It is made of heavy gauge sheet steel with welded construction. Attached to assembly bin, it remains rigid but can be easily removed for change in bench set-up.

NON-BREAKABLE PLASTIC SEAT

MADE of solid moulded phenolic resin plastic, new Model 50 Sperzel toilet seat is claimed to be moisture-proof, shatter-proof, fireproof and unaffected by cleaning chemicals or compounds. Model is equipped with self-sustaining hinge which prevents slamming. Literature available from Sperzel Co., Dept. P, 911 Hennepin Ave., Minneapolis 3, Minn.

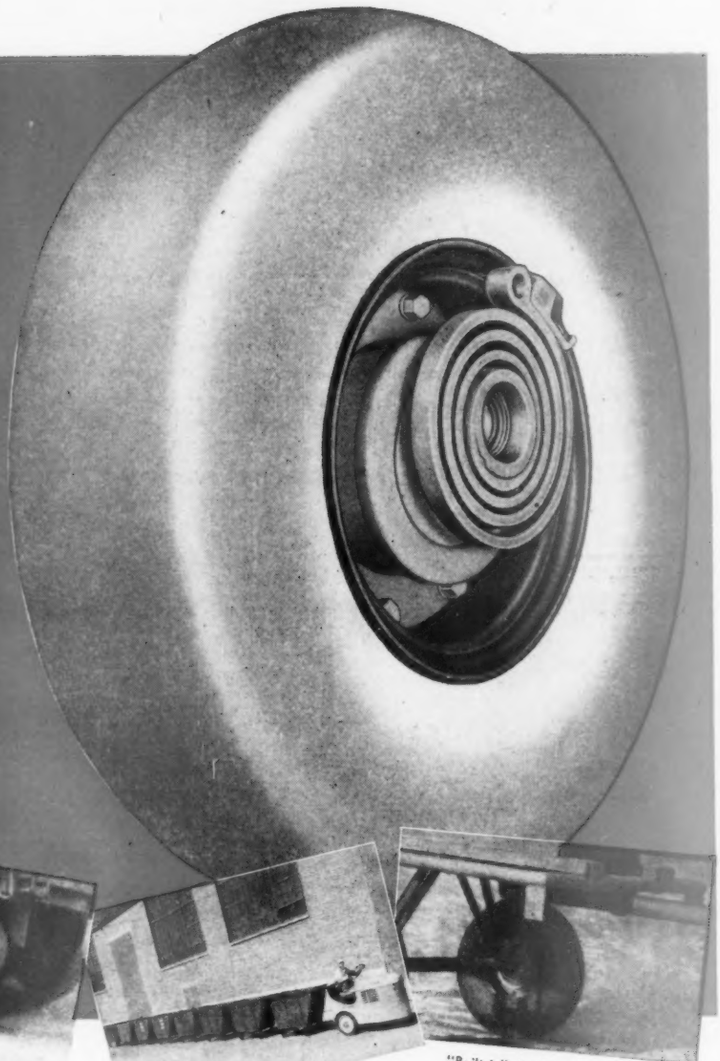
COOLER FOR LIQUIDS, GASES

KARBATE sectional cascade coolers, designed for efficient cooling of corrosive liquids and gases, are announced by National Carbon Co., Inc., New York, N. Y. Construction is such that additional units, or sections may be added, as one would stack office filing cases. They are recommended for service in practically all acids, caustics and organic solvents at pressures up to 75 lbs. psi, and temperatures up to 338° F. Minor changes in the method of applying cooling water permit the handling of gases well in excess of this temperature. Nine feet long, single pipe, Karbate cooler sections are stacked to form a series flow vertical bank. Maximum effective external surface areas of approximately 120 square feet are available in all of the five sizes in maximum recommended cooler height of six feet.

(*Continued on page* 156)

A Long-Awaited Engineering Achievement

The BASSICK "FLOATING HUB"



AT LAST! Here you see the first successful wheel construction with *built-in* shock absorption — the Bassick "Floating-Hub". It's a balanced wheel rolling on a true center with the load carried off center, allowing the wheel to ride the bumps without lifting the load.

A modern cleaning device, the Hydro-Scavenger, rolls easily on Bassick "Floating-Hubs".

An army tank equipped with Bassick "Floating-Hub" Bogie Wheels, providing easier riding and longer life to the rubber treads.

An eight-car train of specialized industrial trailer trucks, hauled with maximum mobility on Bassick "Floating-Hub" Casters.

"Built-in" shock absorption smooths out the bumps. "Floating-Hub" Pneumatic Tire Wheels on Air Corps type wheel trailer.

The "Floating-Hub" Wheel absorbs shocks, dampens vibration, protects loads and operating surfaces, gives longer life to equipment . . . this is not just another inventor's dream or experiment. It has been standing the tests of actual use. Many sizes of Bassick Casters and Wheel Mountings are now in use with "Floating-Hubs" . . . but many fields of possible service for this outstanding engineering achievement are still unexplored.

Bassick engineers will be glad to give consideration to special applications. Write to THE BASSICK COMPANY (World's Largest Manufacturers of Casters), Bridgeport 2, Connecticut. Division of Stewart-Warner Corporation. *Canadian Division:* Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ontario.

Equipment rolls more easily,
Industry reveals,
With the smooth mobility
Of these modern wheels.

Making more kinds of Casters . . . Making Casters do more

BaSSick

TRADE MARK
STICTUM
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Quality for 65 Years
ADHESIVE TAPES
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CLOTHS BACKED
SKINS BACKED
BACKING CLOTHS
COATING
LAMINATING
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H. Rabin, 30 No. LaSalle St.
LOS ANGELES, CAL.
A. B. Boyd Co., 763 E. 14th St.
PETERSBURG, VA.
Wm. A Bragg, 224 No. Sycamore St.
PORTLAND, ORE.
A. B. Boyd Co., S. E. Union & Morrison
SAN FRANCISCO, CAL.
A. B. Boyd Co., 1235 Howard St.
SEATTLE, WASH.
A. B. Boyd Co., 404 Dexter Ave.
ST. LOUIS, MO.
C. E. Wilkins, 1602 Locust St.
WALLASTON, MASS.
S. B. Scott, 123 Elm St
CAPE TOWN, S. A.
K. Stein Agency Co., 12 Plein St.

COATING
LAMINATING
QUICK SERVICE

ADHESIVE and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular needs.

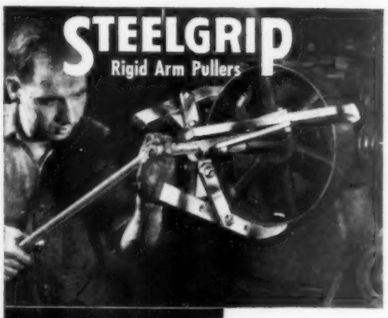
Peters Bros.
RUBBER COMPANY, INC.
160 168 18TH ST., Brooklyn, N.Y.
ESTABLISHED 3 GENERATIONS

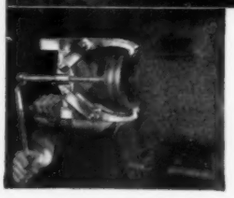
Widely Used to Keep Count!

Industry's favorite "Watchdog of Production" since 1906 . . . Redington Counters are *widely used* on punch presses, pumps, screw machines, packaging machines . . . conveyor lines, can making and box making machinery . . . in fact, *all types* of machinery . . . and production lines. Easy to install . . . *100% accurate.* Write for new catalog.

PROMPT DELIVERY

F. B. REDINGTON CO.
103 S. Sangamon St. Chicago 7, Ill.





Better Wheel Pullers for Every Need

STEELGRIP standard types with drop forged arms and special analysis steel screws in all sizes for pulling wheels, pulleys, sheaves, bearings. Special application pullers and universal CHAINGRIP Pullers that pull wheels, etc. even a considerable distance from end of shaft. *Write for Catalog.*

ARMSTRONG-BRAY & CO.
5378 Northwest Highway, Chicago 30, U. S. A.

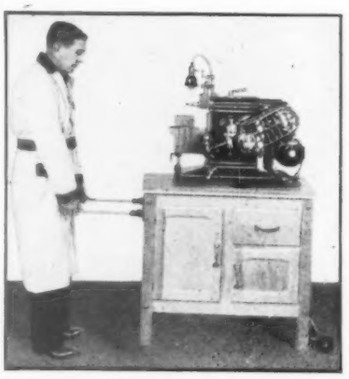
GASKET IS PRESSURE SEALED

GASKET design released by the Goetze Gasket & Packing Co., Inc., New Brunswick, N. J., "literally uses the pressure to be sealed to exert a corresponding sealing pressure on the flange face. It is a serrated type gasket, known as Bellowseal. It consists of two discs of metal (Armco iron, low carbon steel, monel or stainless steel) machined on their external faces with standard serrations and welded together around outer periphery. "Line pressure entering the interior of the gasket exerts expansion pressure in excess of the required sealing force.

FLUX FOR BRAZING ALUMINUM

NEW flux for efficient brazing of aluminum with X-716 wire has been introduced by A. K. Mauk, 7501 Hamilton Ave., Pittsburgh 8, Pa. It is known as "Flo-Well" No. 2, and may be used in furnace brazing or torch brazing. Flowell and X716 may be employed alone in brazing 61S and, in combination with hydrogen and oxygen, may be used in brazing 2S, 3S, 24S and 52S. Sample of both Flo-Well No. 2 and wire X716 will be forwarded on request.

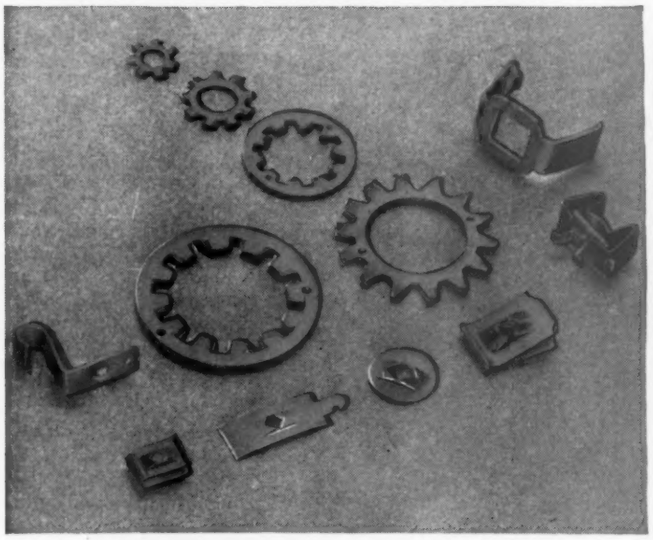
PORTABLE CABINET SHAPER



CONVENIENCE and economy of being able to move an AMMCO 7 in. shaper quickly from one job to another is offered in a new portable cabinet on which shaper can be mounted, announces Automotive Maintenance Machinery Co., 2100 Commonwealth Ave., North Chicago, Ill. Cabinet is provided with casters and a folding handle. Cabinet has two storage spaces and large drawer for tools and accessories. It is made of selected maple with natural varnish finish.

(*Continued on page* 158)

THERE'S A BRIDGEPORT SPRING ALLOY TO MEET EVERY ELECTRICAL AND MECHANICAL REQUIREMENT



Cold Working—rolling or drawing imparts strength and elasticity to copper-base alloys. When used for flat springs, metal finished at tempers ranging from six to eight B&S numbers hard, is generally springy enough for this purpose. Copper-base spring metal alloys have many advantages from an engineering standpoint—fine resistance to corrosion and fatigue, suitable electrical conductivity, dependable spring properties.

Modern control devices depend largely on good electrical contacts and resistance to burning due to arcing. Spring devices for eliminating loosening due to vibration must retain their spring properties under severe operating conditions. Delicate instruments owe their sensitivity to freedom from corrosion.

Engineers and designers recognize the importance of the generous use of high quality spring materials which play such vital parts in the construction of electrical appliances, switches, signal systems, temperature and pressure controls, fastening devices. Bridgeport's Technical Service is available to help in the selection of the spring materials best suited for the many new items as well as for established products that are being improved to give longer, uninterrupted service. Bridgeport's 128-page Technical Handbook will give valuable help to metal fabricators. If you have not yet received a copy send in your request on company stationery.

ALLOYS SUITABLE FOR SPRINGS

		Phosphor Bronze Grade C	Phosphor Bronze Grade A	Nickel Silver 18% (B)	Duronze II	Tin. Brass
ANALYSIS						
Copper	%	91.9	94.35	55.0	97.0	88.0
Silicon	%				3.0	
Tin	%	8.0	5.5			2.0
Zinc	%			27.0		10.0
Phosphorus	%	0.1	0.15			
Nickel	%			18.0		
MECHANICAL PROPERTIES						
Ten. Strength, psi Spring		112,000	103,000	115,000	110,000	85,000
Elongation % in 2" Spring		3	4	2.5	4	3
Rockwell Hardness Spring		B100	B93	B99	B95	B86
PHYSICAL CONSTANTS						
Melting Pt. (Liq)°F		1880	1920	1930	1880	1886
Density, lbs./cu. in.		.318	.320	.314	.308	.317
Coeff. Therm. Exp. per °F from 77°F to 572°F x10-6		10.1	9.9	9.3	9.3	10.4
Thermal Conduct. Btu/sq ft/ft/hr/°F @ 68°F		36	47	17	21	81
Elec. Cond. % IACS @ 68°F Soft		13	18	5.5	7	30
Mod. of Elas. (Tension) psi.		16,000,000	16,000,000	18,000,000	15,000,000	16,000,000
FABRICATION PROPERTIES						
Machinability Rating**		20	20	30	20	20
Cold Working		G	E	G	E	E
Hot Working		P	P	P	E	F
Hot Working Range °F		....	....	....	1350-1550	1350-1550
SPECIFICATIONS						
A.S.T.M.		B103-Grade C	B103-Grade A	B122 Alloy 4	B97 Type A&C	
Federal			QQ-B-746			
Navy			46B14e			
Army						
AMS			4510A			

** Machinability rating—free cutting brass=100.
E—Excellent G—Good F—Fair P—Poor
All figures are nominal values and should not be used as specifications.

BRASS · COPPER · BRONZE · DURONZE · CUPRO NICKEL
NICKEL SILVER · ROD · STRIP · WIRE · TUBING

Warehouse and Jobber Stocks Available for Prompt Delivery

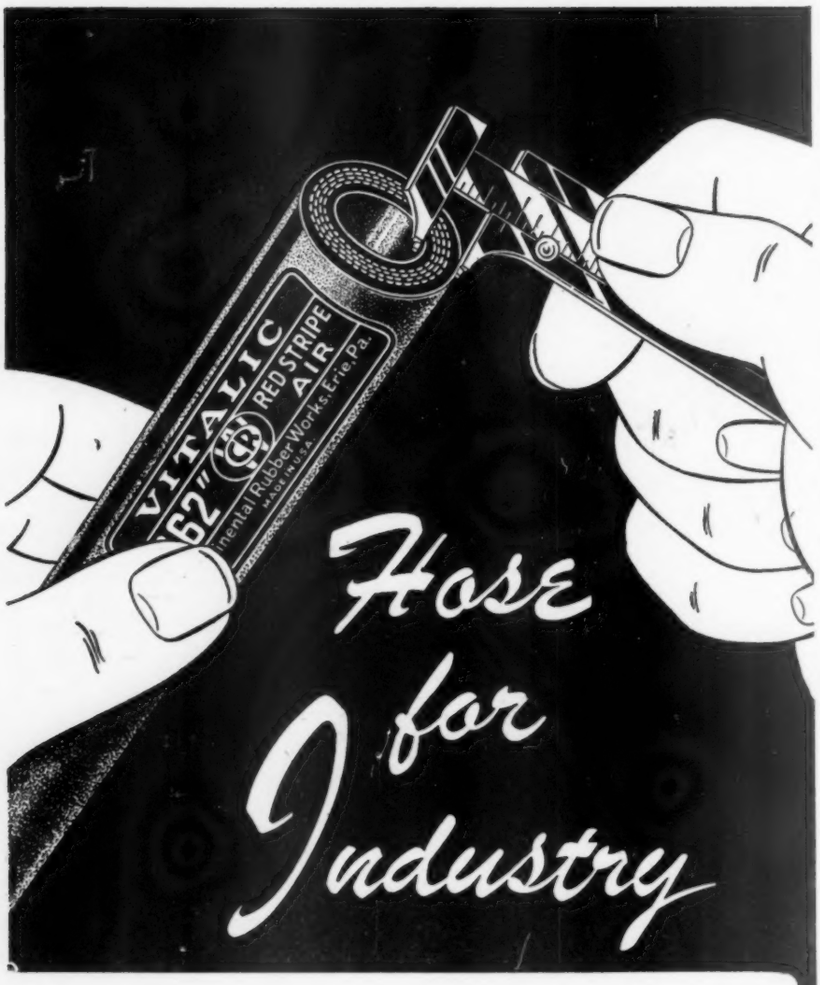
BRANCH OFFICES AND ★WAREHOUSES

Atlanta 3, Georgia...701 Volunteer Building
Boston 16, Massachusetts...524 Statler Bldg.
★ Chicago 32, Illinois.....3453 W. 47th Place
Cincinnati 2, Ohio.....1703 Carew Tower
★ Cleveland 6, Ohio.....1921 E. 119th Street
★ Denver 2, Colorado.....1962 Blake Street
Detroit 26, Michigan.....2328 Buhl Bldg.
Grand Rapids 2, Mich. Assn. of Commerce Bldg.
★ Houston 1, Texas.....2216 Walker Avenue
Indianapolis 4, Indiana...525 Circle Tower
★ Los Angeles 12, California, 130 S. Hewitt St.
Milwaukee 2, Wisconsin, 715 N. Van Buren St.
★ Minneapolis 1, Minnesota. 100 N. Second St.
★ Newark 8, New Jersey.....325 Jelliff Avenue
New York 17, New York..420 Lexington Ave.
New York—Jobber Stocks Available
Philadelphia 3, Penn. ....Broad St. Sta. Bldg.
Pittsburgh 19, Pennsylvania, 1322 Gulf Bldg.
★ Providence 3, Rhode Island...60 Clifford St.
St. Louis 8, Missouri..414 Continental Bldg.
Rochester, New York, 816 Reynolds Arc. Bldg.
★ St. Louis 3, Missouri.....2135 Delmar Blvd.
St. Paul, Minnesota.....703 Ashland Avenue
★ San Francisco 3, California...1155 Bryant St.
Washington 5, D. C...715 Southern Building

"Bridgeport" BRASS CO.

BRIDGEPORT BRASS

BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865



THE longer life you expect—and get—from Continental hose is the direct result of precision methods maintained in every step of the hose-building process. Remember that Continental are longtime specialists in hose design. It will pay you to check your hose requirements with your nearby Continental branch or write the factory direct.

BRANCHES

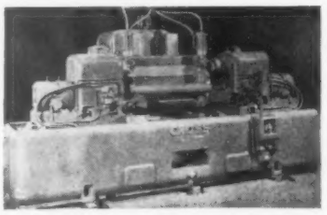
Baltimore, Md.	Dallas, Texas	Kansas City, Mo.	Philadelphia, Pa.
Boston, Mass.	Dayton, Ohio	Los Angeles, Cal.	Pittsburgh, Pa.
Buffalo, N. Y.	Detroit, Mich.	Lutz, Fla.	Rochester, N. Y.
Chicago, Ill.	Greensboro, N. C.	Memphis, Tenn.	St. Louis, Mo.
Cincinnati, Ohio	Hartford, Conn.	Milwaukee, Wis.	San Francisco, Cal.
Cleveland, Ohio	Indianapolis, Ind.	New York, N. Y.	Syracuse, N. Y.

★ *Continental also manufactures molded, extruded and lathe cut goods, as well as a complete line of packing and other industrial maintenance items.*

SEE OUR CATALOG IN SWEET'S

CONTINENTAL RUBBER WORKS
ERIE · PENNSYLVANIA · U. S. A.

SHAFT FACING, CENTERING MACHINE

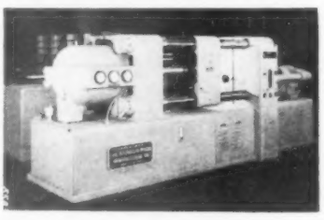


NEW universal machine for facing and centering shafts in sizes from 1¼" to 6" diameter by 9" to 48" long has been introduced by the Cross Co. of Detroit, Mich. Utmost cutting rigidity is claimed, with average changeover time placed at 10 minutes. Machine operates in a full automatic cycle controlled by push button, and is said to face and center 50 average shafts on both ends in 1 hour.

CARBIDE TIP MASONRY DRILLS

CARBIDE tipped Cyclone drill bits for drilling holes in all types of masonry material are announced by the New England Carbide Tool Tool Co.,, 60 Brookline St., Cambridge, Mass They are said to drill 50% faster and to last 50 to 75 percent longer than high speed drills. Drills are made in stock sizes starting at 3/16" up to and including 1-1/2" diameter, by sixteenths. Printed matter available.

DIE CASTING MACHINES



TWO new high pressure die casting machines for casting magnesium, aluminum and copper alloys are announced by the Hydraulic Press Manufacturing Co., Mount Gilead, Ohio. Mold clamping, metal injecting, core pulling and ejecting units are all operated by direct hydraulic means. Injection capacities are 12½ to 100 cu. in. per cycle. Injection pressures from 6,000 to 50,000 psi are available Case history reveals production of 43 units per hour of 5 lb. aluminum casting with projected area of 170 sq. in. Scrap loss averaged one-half of one percent.

(*Continued on page* 160)

YOU'LL *Get it Together...* FASTER!

with

Thor PORTABLE ELECTRIC SCREW DRIVERS and NUT SETTERS

An accurate, adjustable clutch on this Thor Model ULTW electric screw driver provides positive tension control to set screws to exact tightness.

You can drive screws and nuts at top speed, confident that they will be driven to exact and uniform tightness with complete safety to men, material and fastener when you use Thor Universal Electric Screwdrivers and Nut Setters. With Thor's *complete line* of power units and attachments you can be sure of tools with precisely the right speed, power and control to do your assembly jobs better and quicker.

Whatever the size, type, position or tension requirements of your screw driving and nut setting operations—call today on your nearby Thor electric tool distributor. *Thor engineers serving him—and you—have never failed to solve any such assembly problem yet presented!* They'll be glad to check on *yours* . . . without obligation.

INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Boulevard, Chicago 6, Illinois

BIRMINGHAM BOSTON BUFFALO CLEVELAND DETROIT LOS ANGELES MILWAUKEE NEW YORK
PHILADELPHIA PITTSBURGH ST. LOUIS SALT LAKE CITY SAN FRANCISCO TORONTO, CANADA LONDON, ENGLAND

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

...to fill your requirements for

SPECIAL WASHERS & SMALL STAMPINGS

When you need Special Washers or Small Stampings *send us your blueprints or specifications.* If one of our 10,000 sets of tools won't give you what you want, we will place our expert Tool & Die Department at your disposal.

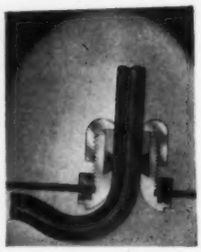
We are specialists in designing and producing Special Washers and Small Stampings from steel, brass, copper and other metals. Our quarter-century of experience is your assurance of careful attention to every detail.

Also a full line of Standard Washers—U.S.S., S.A.E., Burrs, Etc. — in kegs or cartons.

THE MASTER PRODUCTS CO.

6400 PARK AVE. CLEVELAND 3, OHIO

WATER-TIGHT CABLE CLAMP



CABLE clamp designed by H. H. Buggie & Co., Toledo 1, Ohio, is said to provide a secure and distortionless anchor for various sizes of jacketed cables, and to act as a barrier to any flow of moisture along the outside of the cable cover. Tightening nut places pressure on the internally mounted captivated rubber gasket through which cable is passed, and rubber flowing inward takes evenly distributed grip on the cable. Cable may be removed and installed many times without impairing effectiveness of the clamp nor its water-tight feature.

ALL-PURPOSE DRUM-TYPE FLOOR MACHINE

ALL - purpose, drum - type floor machine that accommodates both 8″ and 16″ accessories has been developed by G. H. Tenant Co., 2530 N. 2nd St., Minneapolis 11, Minn. Machine is available with accessories for dry-cleaning, waxing, polishing, scrubbing, sanding and sweeping. It permits cleaning, waxing and polishing in one operation. Design permits operation flush with walls, desks and machinery, and machine is said to be suitable for all types of floors. Vacuum system is powered by a 5000 rpm fan.

PORTABLE CARBON DIOXIDE FIRE EXTINGUISHER

CARBON dioxide portable fire extinguisher in sizes from 2 to 100 lbs., is announced by General Detroit Corp., 2270 E. Jefferson Ave., Detroit, and General Pacific Corp., Los Angeles 21, Calif. It is named the CD-Sno Fog, and is recommended for fighting fires in electrical equipment, oil, grease and flammable liquids. Underwriters' Classification for the 15 lb. size is B-1, C-1.

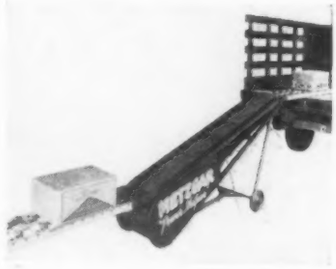
FLOOR PATCHER AND RE-SURFACER

CHEM-ROCK is name of new flooring material announced by the Rock-Tred Corp., 629 W. Washington St., Chicago, Ill., formulated to resist damaging effects of excessive water, oils, greases, fat, fruit and vegetable acids, etc. Manufacturer states it can be used for resurfacing and patching concrete, stone, brick or tile floors. It cannot be used on wood floors. It is packed in 1000, 500, 250 and 100 lb. units.

FLEXIBLE OILPROOF INSULATING VARNISH

DOLPH'S No. 238 black air drying varnish is a flexible, oilproof finishing varnish of a non-pigmented formulation, announced by John C. Dolph Co., 168 Emmett St., Newark 5, N. J. It provides high degree of resistance to both fresh and salt water. Wet dielectric strength is over 600 volts per mil and dry dielectric strength is over 1300 volts per mil. It does not require a special thinner. It may be brushed, dipped or sprayed.

PORTABLE CONVEYOR



COMPACT, maneuverable machine known as the "Power Helper" is announced by the Metzgar Co., Grand Rapids, Mich. It is adjusted quickly from horizontal to an angle of 45 degrees. Elimination of return idler rollers is said to make for long belt life. Machine can be equipped with either a cleated belt or a rubber, grip-top belt.

PORTABLE UNIVERSAL TESTING MACHINE

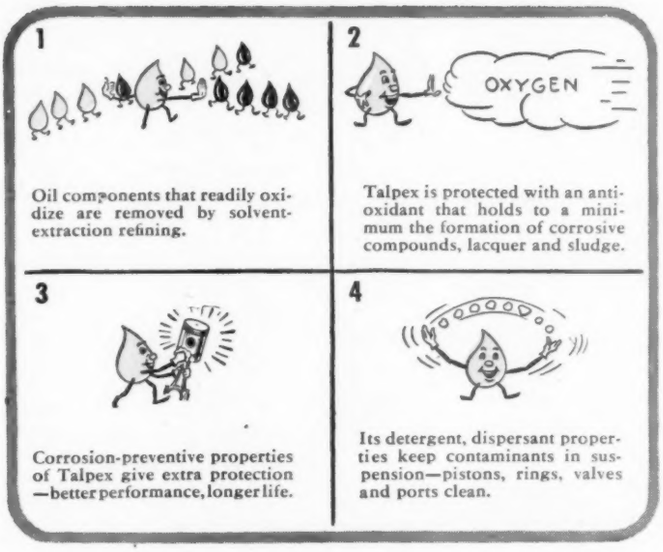
PORTABLE testing machine for tensile, compression, transverse, shear testing, etc., that weighs 137 pounds, stands 37″ high, and which has capacity range from 250 lbs. up to 10,000 lbs., is announced by W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44, Ill. Seven different gages are quickly interchangeable. Catalog available.

STREAMLINED SAWGUN

ILLUSTRATION shows streamlined saw-gun—a portable power saw and file which is propelled by electricity, air or flexible shaft, marketed by Saw-Gun Division of Mid-States Equipment Corp., 2533 E. 73rd St., Chicago. Ordinary hack-saw blade or file fits into the holder. Ribbed hand-grip remains cool in operation.

(*Continued on page* 162)

THESE FOUR *TALPEX* PERFORMANCE FACTORS SAFEGUARD HIGH-SPEED DIESELS


1
Oil components that readily oxidize are removed by solvent-extraction refining.
2
OXYGEN
Talpex is protected with an anti-oxidant that holds to a minimum the formation of corrosive compounds, lacquer and sludge.
3
Corrosion-preventive properties of Talpex give extra protection —better performance, longer life.
4
Its detergent, dispersant properties keep contaminants in suspension—pistons, rings, valves and ports clean.

OF COURSE, you know that no oil will last forever in a Diesel. But do you know that Old Man Oxygen, after years of easy wins over ordinary oils, gets the surprise of his life with Shell Talpex?

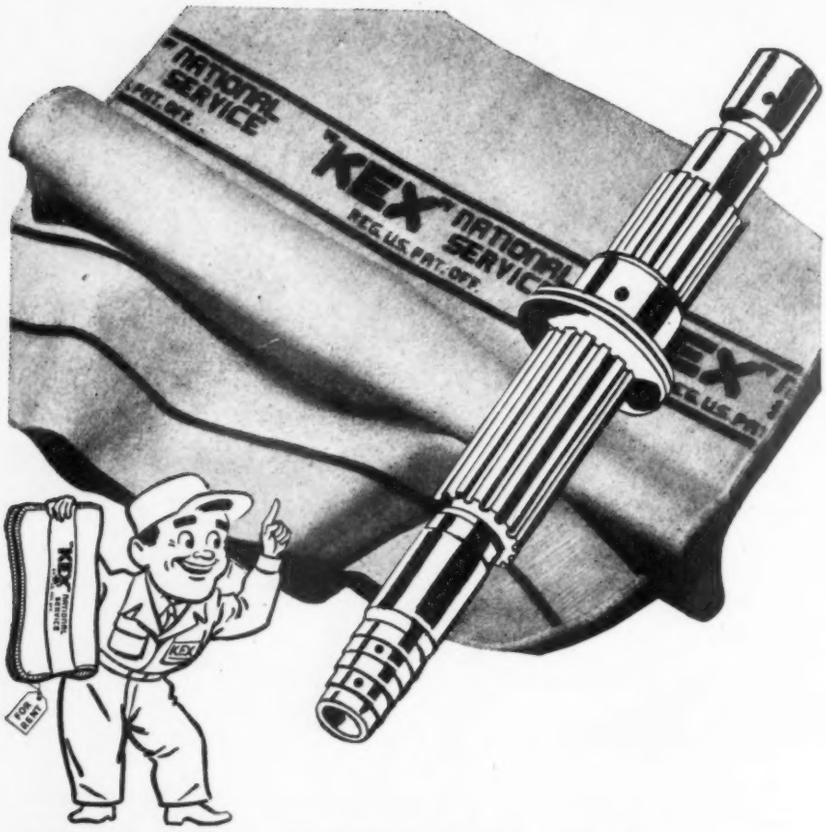
That's because Talpex is doubly protected against oxidation to retard the formation of corrosive compounds, sludge and lacquer.

If the oil you are now using hasn't been doubly protected against oxidation—if it doesn't have special corrosion-preventive properties—if it doesn't have detergent properties—then you had better change to Shell Talpex. Long after an ordinary oil "gives up," Talpex keeps on giving safe lubrication to your Diesel.

The Shell Lubrication Engineer will give you sound advice about the lubrication of *any* type of Diesel, whether slow, medium, or high speed. Write for a copy of Shell's booklet, "The Fundamentals of Diesel Lubrication." Shell Oil Company, Incorporated, 50 West 50th St., New York 20, N. Y., or 100 Bush St., San Francisco 6, California.

SHELL

SHELL DIESEL LUBRICANTS



LOOKING FOR A WIPER THAT'S EASY ON POLISHED STEEL? ...then try "KEX" WIPING CLOTHS

KEX Wiping Cloths are soft and safe. They have no abrasive dirt—no buttons, hard seams, etc.—to dig into delicate finishes. And every square inch of a KEX Wiping Cloth is *wiping* surface—hundreds of more wipes per pound over ordinary waste or rags.

KEX Wiping Cloths are uniform in size—distribution is easier to control. And fresh KEX Wiping Cloths—chemically cleansed by a *special* high-heat process—are delivered as often as needed. You always have plenty of clean KEX Wiping Cloths on hand.

Rent KEX Wiping Cloths and Figure Your Profits

Try the KEX Wiping Cloth system, today! There's nothing to buy, no expensive inventory—just a low monthly rental. And the very first month should show a considerable saving on wiping costs. For complete information, phone your local KEX representative—
—or write KEX National Service, 295 Fifth Avenue, New York 16, N.Y.

"KEX" NATIONAL SERVICE
REG. U.S. PAT. OFF.
"KEX" REG. U.S. PAT. OFF. NATIONAL SERVICE A CALLAWAY MILLS PRODUCT INDUSTRIAL WIPING CLOTHS

CONTROL VALVE

TWO-direction speed control valve for air and hydraulic cylinders, is announced by the Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill. It provides adjustable control of inflow as well as outflow of air or oil independently to and from one side of the piston. One valve will therefore control the piston speed in two directions. One is sufficient for oil operation, but when effective control of an air cylinder is desired, two valves, one for each end of the cylinder are used. Valves are made for working pressures of 250 lbs. for cylinders and 1,000 pounds for hydraulic.

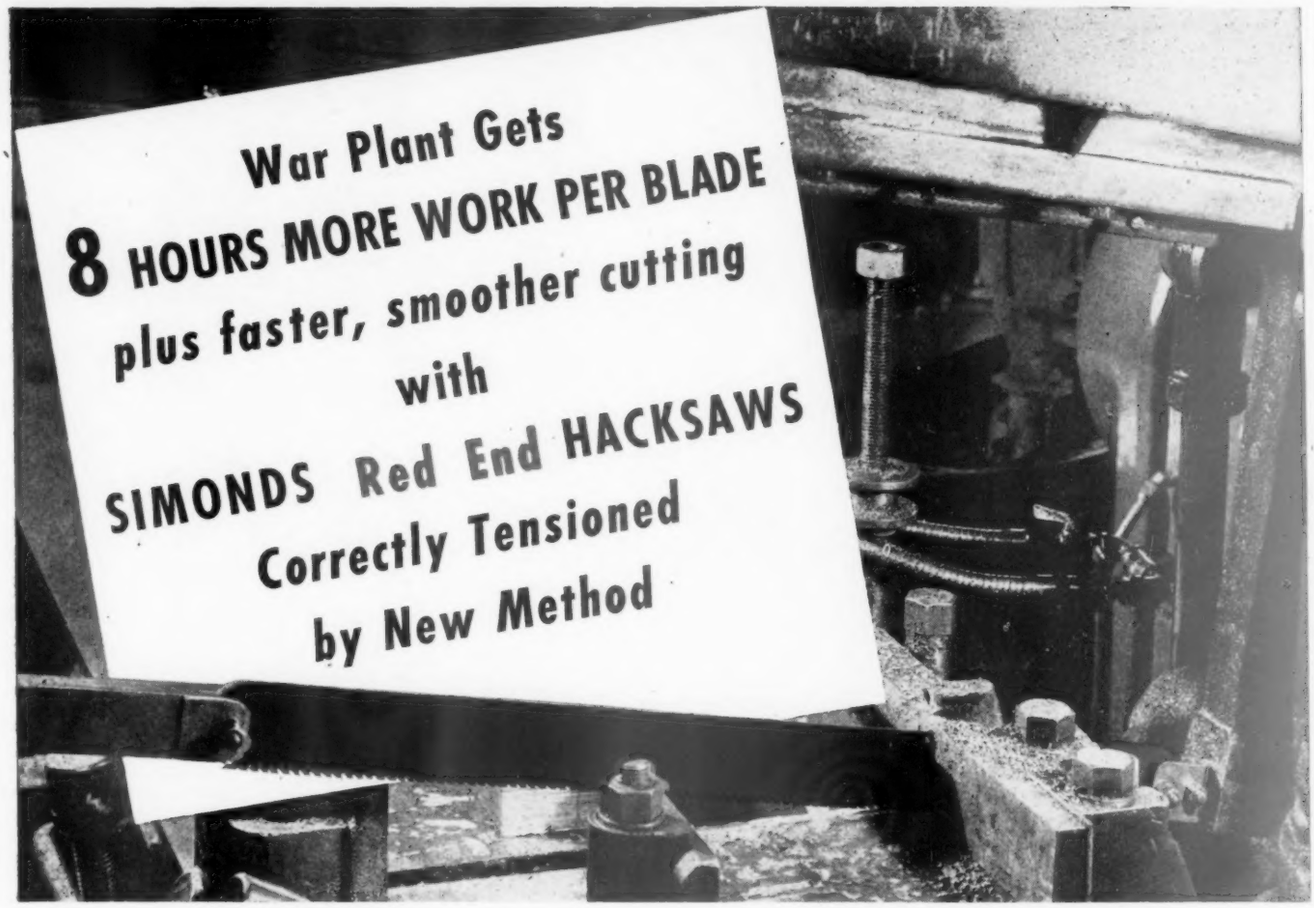
METAL WORKING CUTTING OIL BASES

THREE new cutting oil bases for use in the metal-working trades, including an extreme pressure cutting oil base known as Nopco 1009-C, in which sulphur and chlorine are combined in non-corrosive form, have been developed by National Oil Products Co., Harrison, N. J. Recommended for steel, brass and copper cutting operations, 1009-C is a specially prepared fatty oil base with equal parts of sulphur and chlorine. It is odorless, free from tarry matter, and blends in all proportions with any diluent petroleum oil. Blends are non-rusting and non-corrosive on ferrous metals. 1009-A and 2009-A also are announced, the former being a sulphurized cutting oil base, and the latter a soluble cutting oil base. The former contains 15% sulphur, and is used by dilution or blending with low viscosity mineral oil. Latter is soluble in all proportions in mineral oil.

PIPE JOINT COMPOUND

PIPE joint compound in handy easy-to-use form known as Pipetite-Stik, is announced by Lake Chemical Co., 607 No. Western Ave., Chicago, Ill., It is said to withstand, gasoline, oil, freon, air, water, steam, acid gas, brine, sulphur dioxide, etc. Lubricates and completely seals pipe joint threads, nuts, bolts, gaskets, turnbuckles, etc. Maker says it withstands vibration, temperature changes, deflection, and pressure, and prevents rusting. Joints can be remade without cleaning the treads. May be used for food and refrigeration piping.

(*Continued on page* 164)



IN cutting stainless steel bars, this plant could get only about 9 hours from a hacksaw blade . . . and many cuts were concaved because of incorrect blade tension. Then a *Red End* Blade was put in the same machine . . . *correctly tensioned by Simonds' new technique* . . . and delivered 17 hours of straight, smooth cutting, *almost double the former blade-life.*

You can get comparable results on *your own* power hacksawing operations, simply by doing this: Have your Industrial Supply Distributor bring a Simonds engineer to demonstrate this new tensioning technique right on your own machines. Then you will see for yourself how correctly-tensioned Simonds Red End Blades will speed up and improve production . . . reduce the need for finish-grinding . . . and keep machines more constantly in operation by sharply increasing life-per-blade. This demonstration involves no cost, no obligation, no interruption of your production. Get in touch *now* with your dealer or distributor, or with the nearest Simonds Branch Office.

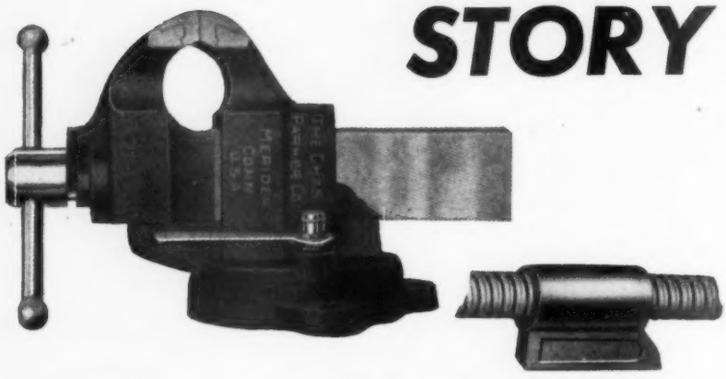
Shorten the War . . . BUY BONDS!

BRANCH OFFICES
1350 Columbia Road, Boston—27, Mass.; 127 S. Green St., Chicago—7, Ill.; 228 First Ave., San Francisco—5, Calif.; 311 S. W. First Ave., Portland—4, Ore.; 520 First Ave. So., Seattle—4, Wn.; 31 W. Trent Ave., Spokane—8, Wn.

SIMONDS
SAW AND STEEL COMPANY
FITCHBURG, MASSACHUSETTS

PRODUCTION TOOLS FOR CUTTING METAL, WOOD, PAPER, PLASTICS

INSIDE STORY



of extra vise strength

Extra strength where you need it most... inside at the heart of the vise... comes from Parker's oversize screw and nut. Screw is one-piece steel – nut made of highest grade malleable iron for greater holding–longer wear. Ask your distributor about the 5 big other advantages of Parker Vises! The Charles Parker Company, Meriden, Conn.

PARKER VISES
America's First Vise Maker

BIRD
Rubberlike*
FLOOR RUNNER

POSITIVE PROTECTION
AT A PETTY CASH PRICE
LESS THAN **6¢** PER SQ. FOOT

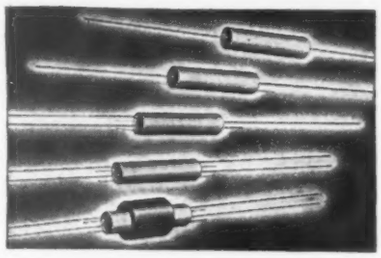
Rubberlike answers a maintenance man's prayer for a low cost floor runner that stands the gaff. Rubberlike does just that — for less than 6c per sq. ft. Wherever traffic batters busy floors, this product of Bird research lasts and lasts. Its resilient corrugations cushion and quiet footsteps, cut cleaning costs. No installation — just unroll. Hugs any surface without cement; won't curl at edges. Makes slippery floors safe — and it's skidproof even when wet. Test it on your toughest traffic floor. Ask your supply house or write for free sample to Bird & Son, inc., Dept. 96, East Walpole, Mass.

BIRD Rubberlike PRODUCTS

*Reg. U. S. Pat. Off.

BIRD & SON, inc., EAST WALPOLE, MASS. · NEW YORK SHREVEPORT, LA. · CHICAGO

MOLDED COIL FORMS

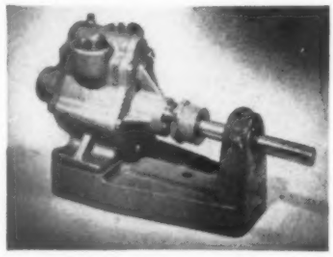


MOLDED Bakelite coil forms with anchored "hairpin" wire leads announced by Electronics Components Divn. of Stackpole Carbon Co., St. Marys, Pa., provide inexpensive, easily-installed coil winding supports. Uses range from universal and tapped universal windings to solenoid windings, antenna or coupled windings, iron-cored I-F transformer or coupled coils and others. Standard forms include forms with coaxial leads each end; single hairpin lead each end; single hairpin lead one end, double hairpin lead the other, and double hairpin lead each end. Coils may be wound on separate tubes and then slipped over the forms or winding may be done on forms direct.

ANNOUNCE MATCHED ANGLE BLOCKS

COMBINATION of matched angle blocks for accurately locating and chucking work for boring, milling, planing operations, and for toolroom and other general uses, is announced by DeVlieg Machine Co., 450 Fair Ave., Detroit, Mich. Units may be used single or in combinations for wide range of large and small work. Each set includes tee slot nuts, studs and screws.

GEARLESS ONE-INCH PUMP



DOUBLE-impeller gearless pump, with standard one-inch connections and a built-in external driveshaft bearing and base, has been developed for the circulation of water, light oil, and other liquids, by Eco Engineering Co., Dept. 61, 12 New York Ave., Newark, N. J. It can pump equally well in either direction. Built-in features eliminate side-pull when pump is powered by a belt-drive and pulley. Impellers are said to pass sand, grit, filings, or sludge without stalling, jamming or stripping and without damage to the bronze pump body. Capacity varies from 7.5 gpm at 600 rpm, to 23 gpm at 1800 rpm. Overall dimensions are 10½" x 4¼" x 5¾".

(*Continued on page* 166)

THEY STAND FOR Quick-Action WHEN YOU NEED BRASS

THOSE little flags you see on the map indicate Chase Warehouses or Sales Offices. There are now 19 Chase warehouses throughout the country (see listing below), and each is equipped to render complete sales service.

This is a "relief" map, then, in a sense. Certainly it's a relief to know, when you need brass stocks in a hurry, that you have only to pick up the phone and call your nearest Chase Warehouse or Sales Office.

Usually, Chase can ship direct from local stock, helping to keep your plant operating until the regular mill order arrives, and saving you valuable time as well as costly production delay.

If you haven't a copy of the booklet, "Commercially Important Wrought Copper Alloys," write—on company letterhead—to Dept. P-66, Chase Brass and Copper Co.

***Remember*— CHASE SERVICE IS AS CLOSE AS YOUR PHONE**

Chase
BRASS & COPPER CO.

Waterbury 91, Connecticut
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

This is the Chase Network—handiest way to buy brass — INCORPORATED —

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO.† LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON† (†*Indicates Sales Office Only*)

CM

68 Years of experience really means something

HOISTS

COMET light weight electric hoist. Capacities from ⅛th to 1 ton.

METEOR heavy-duty electric hoist. Capacities from ½ ton and up.

CYCLONE 12 bearing high speed hand hoist. Capacities from ¼th ton and up.

Since 1876 Chisholm-Moore has been providing industry with many types of overhead materials handling equipment. These years of experience combined with "service-thinking" engineering skill are reflected in the operating efficiency, durability, economy and safety features of all CM materials handling equipment... Hand Chain Hoists, Electric Hoists, Monorail Trolleys, Traveling Cranes, CM Puller (for horizontal pulling) and other CM equipment are fully illustrated and described in Catalog 1944. You'll find the information most helpful. Write us today for a copy.

CHISHOLM-MOORE
HOIST CORPORATION
(Affiliated with Columbus-McKinnon Chain Corporation)
GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.
SALES OFFICES: New York, Chicago and Cleveland

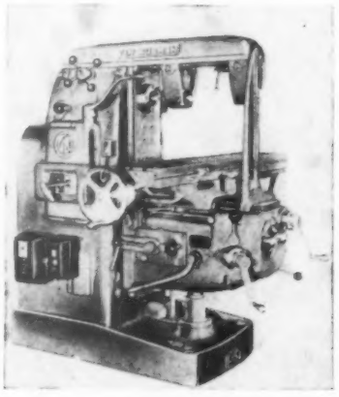
MULTIPLE OPERATIONS RECORDER

THE Ess Instrument Co., Bergenfield, N. J., announces its Operational Recorder to provide a continuous record of "time on" and "time off" of multiple operations. It can be provided with a single acting, two position double acting, or a three position pen. Up to six single or double acting pens can be combined on a single chart. It is supplied in 115 to 230 volts AC, or with special voltages on application. AC clock mechanisms are available from 15 minute periods to 8 days.

SILASTIC COATED FIBREGLAS TAPE

NEW tape made by coating fiberglas with Silastic, Dow-Corning silicone rubber, said to have high dielectric properties — 1100 volts per mil — and capacity to retain this strength at temperatures up to 500 deg. F. and not break down, is announced by The Connecticut Hard Rubber Co., New Haven, Conn. It is marketed under the tradename Cohrlastic, and is available in rolls of various lengths, widths, and thicknesses. At present demand is for .010 and .015 thicknesses. It is not sticky. Wraps are bound at the ends. Gaskets die-cut from the material are used in places where high dielectric strength is required at elevated temperature. It is waterproof; also resistant to arcing and corona cutting.

NEW HORIZONTAL MILLER



HEAVY flywheel on spindle features new No. 2 medium horizontal miller introduced by Van Norman Co., Springfield, Mass. This is said to assure uniform transmission of power to the cutter, make for work accuracy, and to assure smooth finish on the work. Miller has table size of 50" x 10", and a 5 hp motor provides adequate power for every type of cut. Machine is available with plain or universal saddle; latter permits table to be swiveled 45° to the right and 45° to the left.

(*Continued on page* 170)

For New Installations or Replacement Needs

USE BROWN & SHARPE PUMPS

THAT ARE BUILT FOR THE JOB

Into the manufacture of these pumps is incorporated the same attention to design detail and the familiar standards of accuracy, that characterize our machine and tool equipment.

Extensive laboratory and testing facilities enable us to maintain a constant check on materials and workmanship. Daily experience with hundreds of pumps in our plant and the added experience gained from pumps we install on new machines, gives us first-hand knowledge indispensable to the manufacture of efficient, reliable, long-lived pumps.

For complete information get a copy of our latest pump catalog. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

GEARED • VANE • CENTRIFUGAL • MOTOR DRIVEN

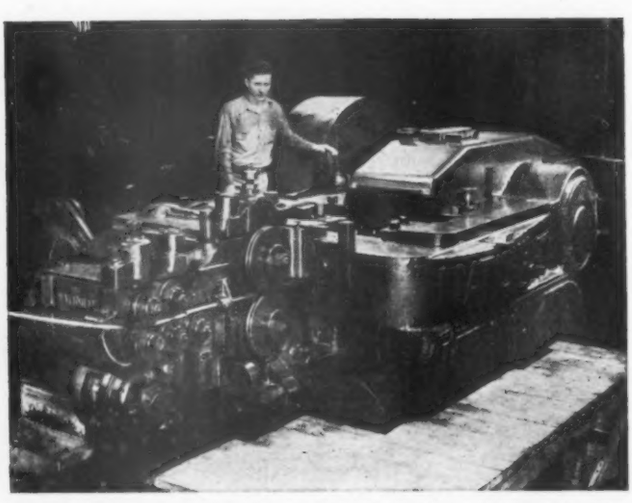
We urge buying through the Distributor

BROWN & SHARPE

MACHINE BOLTS by RB&W

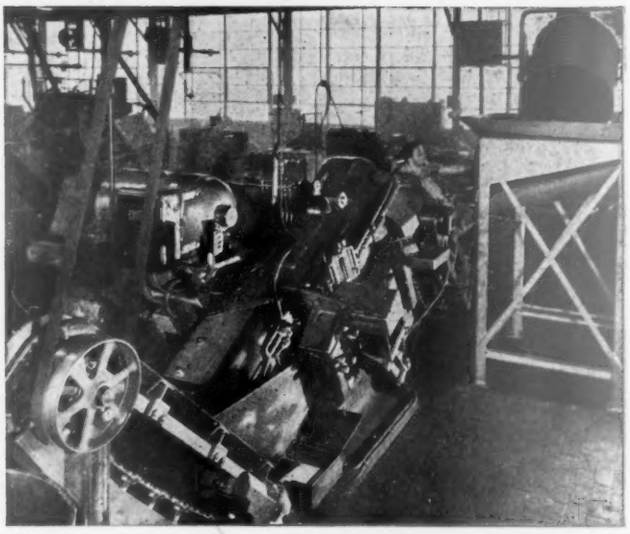
a line of practically unlimited variety ...but just one standard of quality

ANY LENGTHS — With the development of the Rod Header, RB&W cold heads the smaller diameters of machine bolts in the longest lengths.



SOLID DIE — This big machine which cold heads in solid dies — insuring maximum accuracy and soundness — indicates scope of RB&W equipment.

HIGH SPEED HEADING — 11,220 pieces an hour is the rate of this ¼" header.

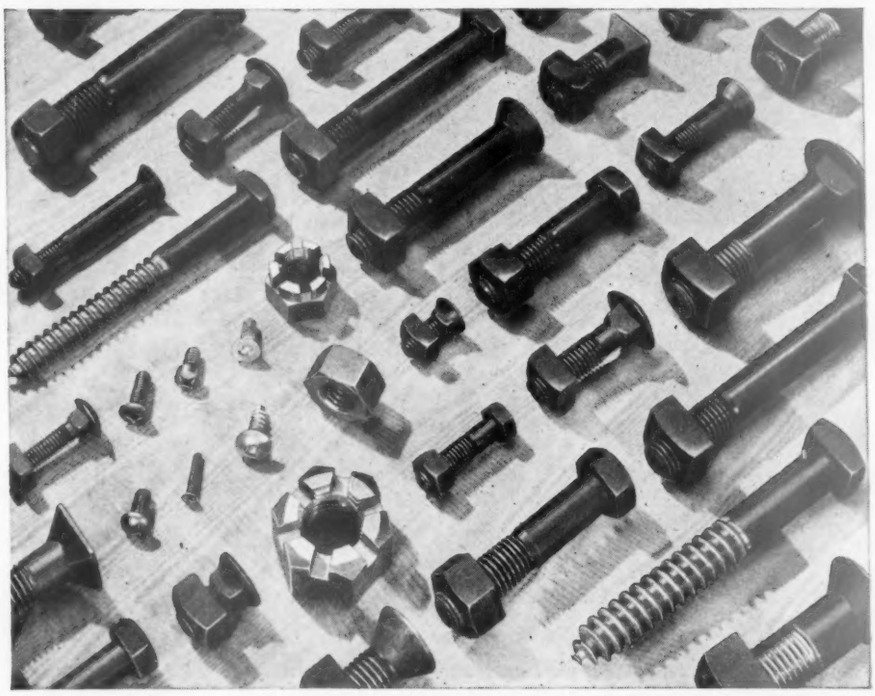


THREADING ACCURACY — RB&W cold forms threads in the widest size range — for maximum strength and precision.

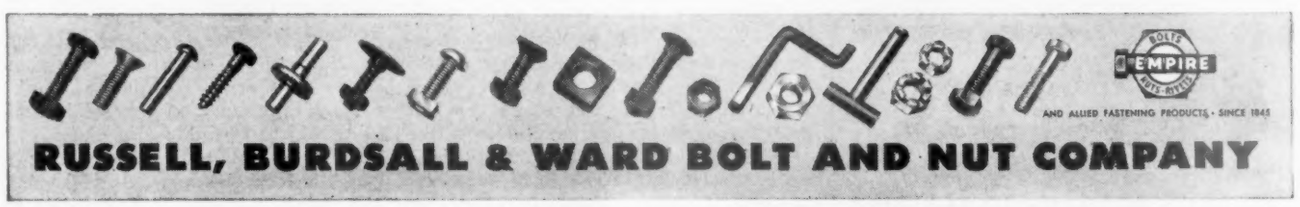
RB&W The complete quality line

The most modern machinery, the use of cold-forming methods for heading and threading, the finest equipped laboratories for analysis of raw materials, and a quality control system that involves continuous inspection *at the machines* . . . assure highest quality and perfect uniformity of RB&W Machine Bolts. These are characteristics which you, as the user, can translate into faster assembly, greater holding power and better appearance.

Whatever your requirements may be in bolts, nuts, screws, rivets and special fasteners, RB&W is your logical source of supply . . . offering the advantages of a 101-year old experience and unsurpassed research and production facilities to provide you with *engineered* fasteners of maximum strength and accuracy and finest finish.

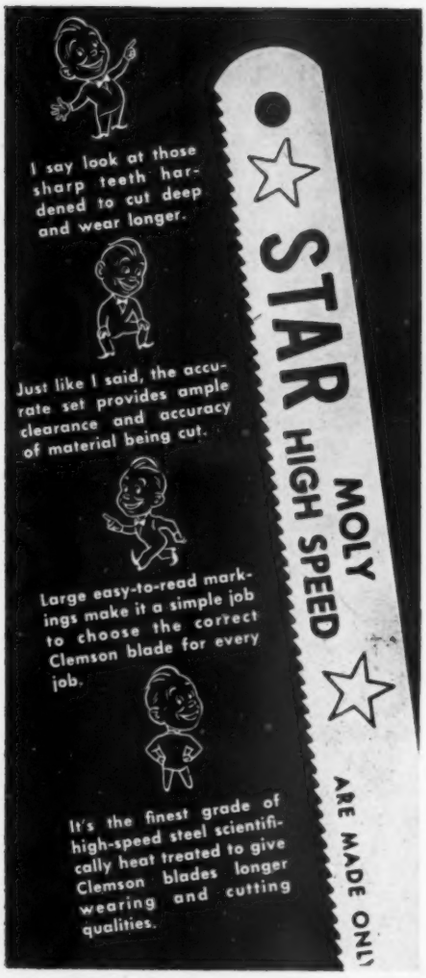


101 YEARS — *Making strong the things that make America strong*



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. ***Sales Offices:*** Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle. ***Distributors*** from coast to coast. By ordering through your distributor you can get prompt service for your normal needs from his stocks. Also, the industry's most complete, easiest-to-use catalog.


I say look at those sharp teeth hardened to cut deep and wear longer.
Just like I said, the accurate set provides ample clearance and accuracy of material being cut.
Large easy-to-read markings make it a simple job to choose the correct Clemson blade for every job.
It's the finest grade of high-speed steel scientifically heat treated to give Clemson blades longer wearing and cutting qualities.
STAR
MOLY
HIGH SPEED
ARE MADE ONLY

A BLADE PLUS!

READ ALL ABOUT IT

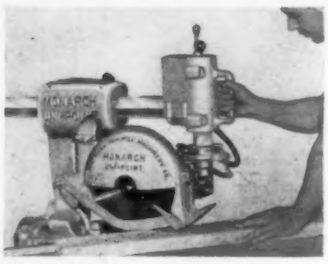
in Metal Cutting. It's a handy pocket size booklet on the art of metal sawing, covering the important points in the selection, use and care of hand and power hack saw blades, and the proper use of the sensational STAR Hack Saw Frame. Copies are available for distribution. And they are free to you.

7391

CLEMSON BROS., Inc.
Middletown, N. Y.

CLEMSON
Makers of Hand and Power Hack Saw Blades, Frames, Band Saw Blades, and the Clemson D-17 Lawn Machine.

LIGHTWEIGHT RADIAL SAW



LIGHTWEIGHT portable 12-inch radial saw which it is said will save 25% or more of the usual power saw time on the average industrial or other production job, is announced by American Saw Mill Machinery Co., Hackettstown, N. J. It is known as the Monarch Uni-Point. Principal structural material is magnesium, and unit complete with carrying frame and 1½ hp motor weighs approximately 200 lbs. Unit is so compact that it can be carried through 30-inch doorway.

NEW LOCK FOR DOORS DRAWERS CABINETS

WONDER-LOCK is name of new lock for cabinets, drawers, desks, doors, etc., that is said to offer positive theft-proof protection, made by WonderLock, 53 W. Jackson Blvd., Chicago, Ill. It is designed to fit practically every type of sliding drawer or swing door of wood or metal. One size serves all purposes. Has two-sided key. Key duplication is said to be impossible as uncut key blank cannot enter double bitted lock. Two drawers can be locked with one lock. Printed matter available.

Although heavy for plastics, this material weighs about the same as magnesium.

CONICAL ROLLER THRUST BEARINGS

ILLUSTRATION shows conical roller thrust bearings to supplement straight roller type of thrust bearings. Design is such that the apex of the cone formed by the rollers meets at the true center of the bearing. This permits the rollers to align themselves between the taper faces and the outside rib of the raceways. Higher speeds are easily handled by this type of bearing, according to the Kaydon Engineering Corp., Muskegon, Mich. Bearings are designed to carry thrust loads only. Complete series of standard sizes from 9 7/8" OD to 19½" OD, and load capacity up to 440,000 lbs., is being made.

CLAIM MORE HOLES PER TAP

LINE of high speed taps treated by what is known as the electrolizing process—combining high voltage with a chemical bath and a rare metal to produce an exceedingly hard case on the cutting edges and entire surface of tap, is announced by the Electrolized Tap Corp., 148 West River St., Providence, R. I. The case Rockwells approximately 83 on the C scale without being brittle. Maker states that dimensional accuracy of tap and the thread is not affected. Bulletin describes the taps in detail.

TAPE DRIVE DIAL SCALE

NEW improvements in the tape drive scale of the Howe Scale Co., Rutland, Vt., are said to result in increased weighing life and reading accuracy. Features of the new portable dial scale include positive drive, self-aligning of tapes and a 300% increase in tape strength, self-compensating mechanism for temperature changes, back weighs within front weighing tolerance and extreme simplicity in sealing. Design permits placing of loads on extreme edges of platform.

FULL CAPACITY FLEXIBLE VISE

NEW "Milpal" machine vise that can be adjusted to hold work from zero to maximum table capacity and which utilizes 90% of the longitudinal capacity of the flat table surface of any machine with "T" slots, has been announced by Porterfield Mfg. Co., 749 E. 15th St., Los Angeles 21, Calif. Construction is of heavy semi-steel castings, heavy ribbing, steel jaws, heavy 1" 6-thread steel lead screw and bronze nut — both running in oil. Savings of up to 75% on set-up time are claimed.

FACE MILLING CUTTER

NEW face milling cutter, using solid carboloy blades, has been developed by Super Tool Co., Detroit, Mich. Only one type of body is required for machining all materials, the only variation being in the angles ground on the solid carbide blade which is readily altered for specified material. Use of unbrazed carbide metal is said to effect longer grind life and resistance to cracking, chipping and breakage. Cutters are available in 6", 8" and 10" diameters, both right and left-hand.

Largest Stocks in History Assure

PROMPT SHIPMENT OF ALCOA ALUMINUM SCREW MACHINE STOCK

Standard Sizes • 11S-T3 and 17S-T • ROUNDS • HEXAGONS

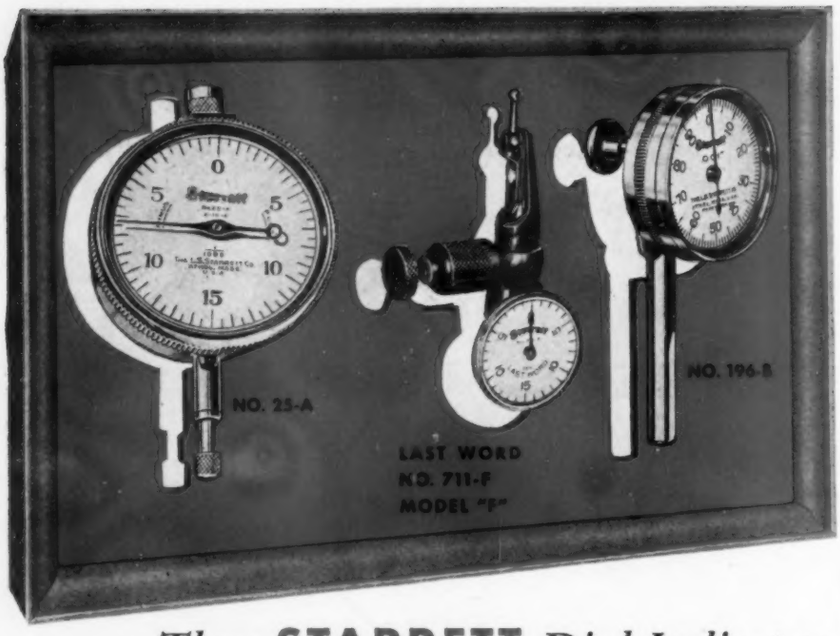
Don't let lack of stock hold up your screw machine production. Decide now to "turn it out of Alcoa Aluminum", and get prompt shipment on all the stock you need. Stocks of Alcoa Aluminum are again available in principal cities.

Hundreds of manufacturers of screw machine products have switched to Alcoa Aluminum. It cuts their costs and swells their profits—prices are less than pre-war. They have discovered that it can be worked at top machine speeds; that it results in a fine finish, highly resistant to corrosion; and—gives three times as many pieces per pound as other screw machine stocks.

Back of the nationwide stocks stand larger supplies at Alcoa mills. So—when you switch to Alcoa Aluminum Screw Machine Stock, you can be sure of a steady source of supply. Phone the nearby Alcoa office. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALCOA ALUMINUM



These **STARRETT** *Dial Indicators Fit Into Your Production Inspection Picture*

By mounting appropriate models of these standard STARRETT Dial Indicators on tool spindles, production jigs or simple fixtures of your own design, you can "tailor to fit" countless production inspection applications. Each type has special advantages but all feature Starrett accuracy, and workmanship, clear, easy-to-read dials, maximum convenience in installation and operation. For a detailed display of the complete line of Starrett Dial Indicators, write for new edition of Dial Indicator Catalog "P".

THE L. S. STARRETT CO.

ATHOL • MASSACHUSETTS • U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • HACKSAWS
METAL AND WOOD CUTTING BAND SAWS • GROUND FLAT STOCK

FLUORESCENT LAMPS GIVE OFF MINIMUM ENERGY

In the 1930's many users of light became convinced of the desirability of much higher levels of illumination — numbers of them were willing to buy 50 foot-candles or more, according to Ward Harrison, manager of Engineering Division of General Electric's Lamp Department. What stopped them? The answer is heat. Users soon found that except in cold weather the energy from an incandescent lighting system capable of producing 50 footcandles was too warm; much of this because of radiant heat. Fortunately that situation is changed; fluorescent lighting systems capable of producing 50 footcandles do not give off any more total energy than a filament installation producing 20 footcandles nor as much radiant heat as an incandescent installation producing 10 footcandles. The heat problem, therefore, is for the time at least pretty well eliminated from the picture.

EASILY APPLIED INSULATOR PREVENTS CONDENSATION

Mystick Self-Stick Dri-Pipe is the name of a pipe jacketing material announced by Mystick Adhesive Products, 2635 No. Kildare Ave., Chicago, Ill., which is claimed to permanently prevent

Dri-Pipe is held to the pipe by its own "self-stick" adhesive edges

condensation under warm, humid conditions by forming a sheath-like jacket around the pipe. It is made of a water repellent thick, pliable insulating with a moisture proof backing. The backing has "self-stick" adhesive edges. The material is applied lengthwise to the pipe (not spiralled), one self-sticking edge being placed on the pipe, the material wrapped around the pipe, and sealed with the other self-stick adhesive edge. Dri-Pipe is made in one size for covering half-inch and ¾ inch pipe. Larger size pipes, air ducts, tanks, etc. are covered by splicing necessary widths which is quickly done by using the material's adhesive edges. Painting is unnecessary, though material will take paint for decorating purposes.

PLASTIC COATED BOTTLES

Tough nitrocellulose plastic coated bottles in which corrosive liquids can be shipped or stored without danger of the liquid leaking out if the bottle is broken, appear to be the answer to one of the chemical industry's oldest problems.

The coating provides a protective armor

(*Continued on page* 176)

Model 4 Portable Handy for Lab Fires

Light in weight, simple to operate, the Kidde Model 4 Hand Portable Extinguisher is especially useful in fighting the small incipient blazes that may break out in plant laboratories, where flammable liquids are frequently used.

The simplicity of operation of the Kidde Model 4 is of special advantage for laboratory personnel, who may not have had as extensive fire-fighting training as the plant workers. With a Kidde 4, it is necessary only to raise the horn, aim the extinguisher at the fire, and pull the trigger.

Full details on the Model 4 are available from Walter Kidde & Company, Inc.

Do your employees KNOW HOW to fight FIRES?

Don't take chances on their knowledge — teach them the *sure* way... by demonstration. "How to Teach Fire Fighting" tells exactly how to conduct demonstrations — write for your free copy.
Walter Kidde & Company, Inc.
628 Main Street, Belleville 9, N.J.

Kidde

HARD-HITTING
FAST-STARTING
EASY-TO-USE
EXTINGUISHER

15 pounds of carbon dioxide —controlled by simple, foolproof trigger grip valve—that's the unbeatable combination you get in the Kidde 15 Hand Portable!

Mail and Phone Orders Filled

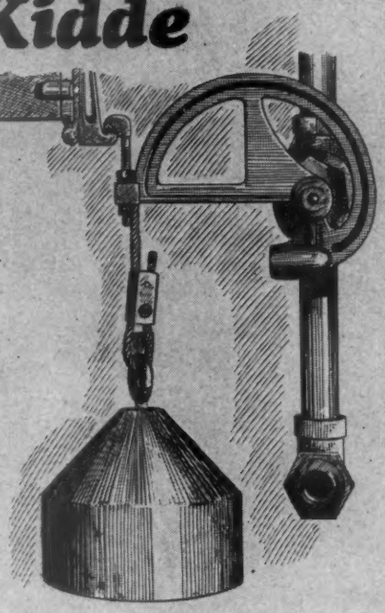
Kidde

FULL FIRE-FIGHTING RANGE...
INSTANTLY!

The stream from a Kidde Water Extinguisher reaches its full range as soon as the discharge starts—*maintains* its range till extinguisher is empty.

Mail and Phone Orders Filled

Kidde



Two-way protection from one bank of cylinders

Put *one* bank of carbon dioxide cylinders on guard over *two* fire hazards, by installing a Kidde built-in system with directional valves. Automatic valves direct the carbon dioxide discharge to the threatened area as soon as Kidde Heat Detectors signal the start of a fire. Manual valves are operated by a simple three-quarter turn. Write for full details.

The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Walter Kidde & Company, Inc. • 628 Main Street, Belleville 9, New Jersey

Firm Rebuked

WASHINGTON 27.—The

General output at factories and mines decreased 4 per cent in October, while in the first half of Novembe

Meat May Become

stationed in a little town in France for several months, wooed a Frer n girl by telling her about

For leakproof joints between bolted flanges

. . . this tough, resilient sheet packing

Armstrong's No. 841 Fibrated Leather is made of live, springy leather, fibrated by a special process and saturated with a special protein binder. This sheet packing is tougher, more resilient, more impervious to liquids, and more stable than vegetable fiber gasket materials. It is compressible, has a high percentage of recovery, and takes a minimum amount of set, provides a positive seal for oil, gasoline, grease, or water at temperatures up to 300° F.

These advantages explain why engineers use No. 841 extensively for sealing transmission covers, transfer case covers, handhole covers, and for other applications that require a leakproof joint.

If you're working with aluminum or magnesium, use Armstrong's No. 143 special sheet packing. It will not corrode light metals, even in the presence of moisture or salt water. Dense and tough, No. 143 is ideal for thin, lightweight gaskets. And for a sure, long-lasting seal at low cost, Armstrong offers a general-purpose fiber sheet packing, No. 1242.

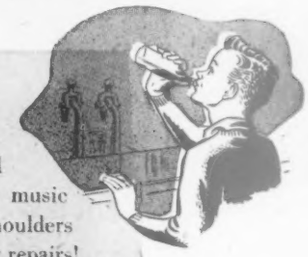
You can get Armstrong's fiber sheet packing materials in die-cut pieces, roll goods, and sheets—in standard thicknesses. Free booklet, "Gaskets, Packings, and Seals," gives specification data. Write today for your free copy. Address Armstrong Cork Company, Gaskets and Packings Department, 7206 Arch Street, Lancaster, Pa.

For same-day service on die-cut fiber sheet packings, consult your near-by gasket cutter. Many leading cutters stock Armstrong's sealing materials.

ARMSTRONG'S INDUSTRIAL PRODUCTS: GASKETS, PACKINGS, SEALS, and MECHANICAL SPECIALTIES of Cork, Synthetic Rubber Compounds, Cork-and-Synthetic-Rubber Compositions, Cork-and-Natural-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers • RESILIENT SURFACINGS for desks, bars, counters, etc. • FLOORINGS for buses, railway cars, etc. • TEXTILE MILL SUPPLIES • SHOE MATERIALS • ADHESIVES • GLASS INSULATORS for communications, power lines.

ARMSTRONG'S
GASKETS • PACKINGS
AND SEALS

In Springs — it's the X-Dimension that saves tempers, costs, customers



The sets of Hunter springs you see here force up the bottle platforms of a beverage bottling machine. Lift finder springs used to be single, edge wound from flat wire to reduce the possibility of buckling and rubbing on piston and cylinder. It was costlier. It lacked certain needed properties. The nature of design overstressed and broke the spring and the machine had to be held up for time-wasting replacements.

Hunter came up with a spring-within-a-spring design. Now an inexpensive flat wire inner-spring prevents buckling and takes piston wear. A round music wire compression spring shoulders most of the load. Down went repairs! Up went customer satisfaction.

This is a kind of service you can't blueprint, but it's there in Hunter springs. It's the X-Dimension . . . more than you bargained for . . . in springs. Make sure you and your customers get it for real satisfaction.

HUNTER
Science in Springs

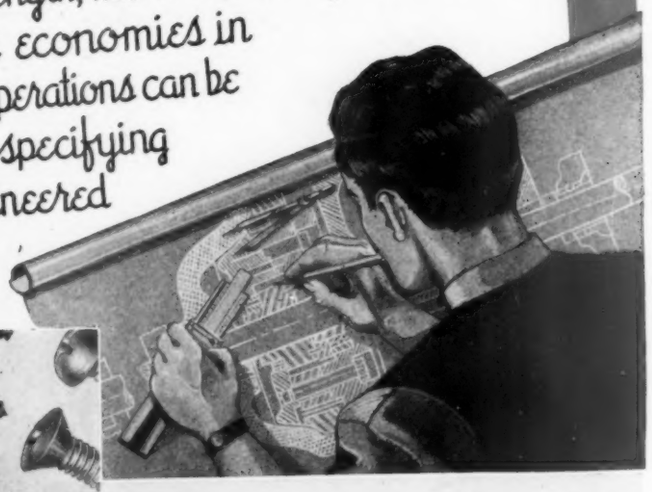
HUNTER PRESSED STEEL COMPANY
Lansdale, Pennsylvania
SPRINGS • METAL STAMPINGS • WIRE FORMS
MECHANICAL AND ELECTRICAL ASSEMBLIES

MEMO TO PURCHASING MEN—

• Next time your engineers hand you a tough spring procurement job, let Hunter help you get your money's worth.

Fasten Tighter, Stronger at Less Cost!

More than ever before, production economies must be emphasized in the design of new products. In addition to reducing labor costs, product performance must be improved. Greater strength, more enduring service and definite economies in assembling operations can be achieved by specifying "Holtite" engineered fastenings.



Man hours in assembling operations can be saved at the drawing board! The right fastening for each application, specified in the design of your new products or when re-designing old products, will reduce production time and costs. Keep a copy of the Continental Screw Company illustrated catalog in your Engineering Dept. It contains comprehensive fastening data, full listing of all sizes, dimensions, weights, diagrams, recommendations and other helpful information.

Cut Fastening Time 50%

Time study records show 50% and more saving in fastening time when HOLTITE-Phillips recessed head screws are used. Precision recess and mated tapered bit permit safe power driving, even on finished parts. Replace old screw driving method with this modern, cost-cutting fastening practice. Specify HOLTITE-Phillips.

CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.

(*Continued from page* 172)

around the bottle and holds its shape even though the glass underneath is shattered.

This plastic coating is so tough that when test bottles containing sulphuric acid were thrown against a metal wall with sufficient force to break all the glass, the coating retained its shape and prevented the sulphuric acid from seeping through.

The coating has other advantages. It is transparent and can be colored with dyes for identification purposes and it protects the label on the bottle, which if not covered frequently becomes illegible through handling and wear and tear. Also, the bottles can be washed without affecting the qualities of the coating.

The nitrocellulose coated bottles were developed by the Detroit Macoid Corporation, Detroit, Michigan, during the war and are expected to find wide acceptance for use in laboratories and plants where corrosive liquids are used and stored as well as for chipping these liquids.

At the present time one gallon bottles are being coated. The bottles are dipped into a solution based on Hercules Powder Company's nitrocellulose. When the excessive plastic has dripped off, an even film of from 20 to 25 thousandths of an inch remains on the bottle.

EFFICIENT MATERIAL HANDLING CUTS PRODUCTION COSTS

With material and labor costs rising steadily, American manufacturers' greatest hope for keeping on a sound competitive basis lies in their ability to reduce overhead through efficient plant layout and material handling, members of the American Management Association were told recently at a meeting in the Palmer House, Chicago, Ill.

"In a normal pre-war year, our industries paid out more than five billion dollars just for handling material from the receiving to the shipping stage," declared R. W. Mallick, head of the Plant Layout and Materials Handling Section of the Westinghouse Electric Corporation. "With proper planning by competent engineers, handling costs can be greatly reduced."

"Despite our famed mass production methods of processing and assembling, we have not scratched the surface of the potentialities offered by sound industrial planning."

Mr. Mallick pointed out that many manufacturers fail to recognize that material handling requires more human effort than processing or assembling and therefore accounts for a greater percentage of the true production costs.

Studies reveal that within factories, a unit of material averages from 20 to 150 handlings, dependent on the product and the industry," he continued. "Taking the minimum figure, for every 1,000 pounds of material received at a plant, you pay for handling 20,000 pounds through your plant. More efficient handling methods will reduce costs, reduce accidents and allow more production with better quality."

(*Continued on page* 178)

SKILTOOL CLINIC
CUTS YOUR COSTS!

• Here is a wonderful opportunity for operating men to find out the newest ways to cut costs throughout your plant by wider use of fast-working SKILTOOLS on both production and maintenance. Your distributor will hold a SKILTOOL CLINIC in your plant. You'll see all the new SKILTOOLS in action . . . see how they make countless jobs easier . . . how they *step up the hourly output per worker.* A specially trained SKILTOOL Engineer will accompany your distributor at your clinic and work directly with your foremen in selecting the right tool for the job . . . give valuable tips on tool care . . . assist your staff in bringing down increasing hourly costs! Fill out the coupon now!

SKILSAW, INC.
5033-43 Elston Avenue, Chicago 30, Ill.
Factory Branches in All Principal Cities

PORTABLE ELECTRIC
SKILTOOLS
MADE BY SKILSAW, INC.

Mail This Coupon Today!

SKILSAW, INC.
5033-43 Elston Ave., Chicago 30, Ill.

We would like to have our distributor conduct a cost-cutting SKILTOOL CLINIC in our plant on or about (date).....

Name.....

Address.....

City..... State.....

Tiger Grip

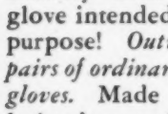
The GREATEST IMPROVEMENT IN WORK GLOVES IN THE PAST TWENTY YEARS!

Entirely different from any glove intended for the same purpose! *Outwears several pairs of ordinary woven fabric gloves.* Made of specially knitted material with hundreds of "loops" in every square inch, to cushion and protect the hand. Can be washed without excessive shrinkage—and hold their shape! Treated with Johnson's "DRAX" to make them water repellent! Tested in laboratories and under actual working conditions.

Guaranteed by Good Housekeeping

Send For New CATALOG

Big, new catalog lists full line of ADVANCE work gloves including leather palm gloves, flannel gloves, wire stitched gloves, welder's gloves, etc., as well as a complete line of safety and protective clothing for every industry.



"A Better Work Glove For Every Purpose"

ADVANCE
GLOVE MANUFACTURING CO.
DEPT. P-1, 901 W. LAFAYETTE BLVD.
DETROIT 26, MICH.
Detroit • Toledo • Chicago • Rome, Ga.

FORECAST GAS TURBINES FOR GENERATING ELECTRIC POWER

What the United States Navy and the Allis-Chalmers Mfg. Co., Milwaukee, Wis.—as yet the country's only builder of commercial gas turbines—have been learning about gas turbines of the future was revealed to technical and science editors of leading national publications recently at the Naval Engineering Experiment Station at Annapolis, Md., where the first large stationary gas turbine ever to generate power with a gas temperature as high as 1350 degrees Fahrenheit is undergoing tests.

Operating under progressively increasing gas temperatures, the experimental gas turbine will be run at an eventual maximum of 1500 degrees Fahrenheit. With this unprecedented high temperature experience making the project highly significant to all potential users of gas turbines, an idea of its importance was indicated in a prediction by Admiral Earle W. Mills, Assistant Chief of the Bureau of Ships, that "we know that we are on the threshold of a development which, five or ten years hence, will be seen to be as significant as that earlier period when the Navy was engaged in research which ultimately led to the introduction of high pressure high temperature steam, and high speed diesel propulsion."

Advantages of Gas Turbine

"The gas turbine does away with the necessity of installing boilers, condensers, and complicated steam lines in ships, and the gas turbine cycle can be operated at much higher temperature than the practical limitation of 850 degrees Fahrenheit for shipboard installation now present in steam turbine construction," stated Lt. Comdr. Kottcamp, officer in charge of testing.

"This means that gas turbines can be designed to weigh less, occupy less space, or maintain higher thermal efficiency than the steam turbine—this greatly increasing the cruising range of Navy ships.

"The experimental gas turbine now operating at 1350 degrees Fahrenheit is running well above the previously set metallurgical limit of 1300 degrees Fahrenheit for such engines. Consequently, we are pushing into the unknown in many fields with this experimetal model," concluded Commander Kottcamp.

Dr. T. S. Rettaliata, consulting engineer on gas turbines for Allis-Chalmers, pointed out that although this gas turbine plant has been developed as a Navy project, it has characteristics applicable for both land and marine use.

"Engineers regard it as a highly significant step in development of what has been called the fourth prime mover — following the steam engine, the steam turbine and the internal combustion engine," Dr. Rettaliata said. "Optimistic engineers in recent years have forecast eventual use of gas turbine power plants to generate electric power on land and to serve as propulsion power for planes, ships and locomotives."

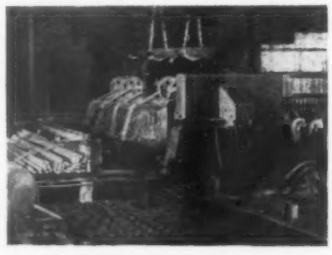
1710 "APPROVED" SURPLUS-MACHINE DEALERS

A total of 1,710 "approved dealers" licensed to solicit and negotiate sales of government-owned surplus machine tools and other production equipment under the agency-dealer plan for such surplus property, is announced by the War Assets Administration. "Approved dealers" are principally machinery manufacturers, dealers and distributors, and used machinery dealers, although others with sufficient engineering and sales background may qualify. Preference is given to veterans having suitable qualifications. Under the dealer-agency plan, approved dealers are paid sales commissions equal to 12-½ percent of government disposal prices. Prices to buyers, however, are the same whether the purchase is made through an approved dealer or direct from any WAA field office.

* * *

PICKLING TIME CUT 60%

Pickling of steel bars can be greatly accelerated by the practice of raising and lowering a sling full of bars in the pickle vat. This procedure causes the bars to move one against the other, cracking the oxide scale and aiding in its removal. Utilizing this principle, The Youngstown Welding & Engineering Company has developed a new mechanical pickler which automatically raises and lowers five to ten tons of bars at a predetermined, continuous rate. Ordinarily, this work is done by a crane, and the new Weldco pickler thus releases the generally overworked crane for other plant operations. Pickling time is often cut 40 to 60 per cent, with resultant savings in steam, man power, and maintenance.

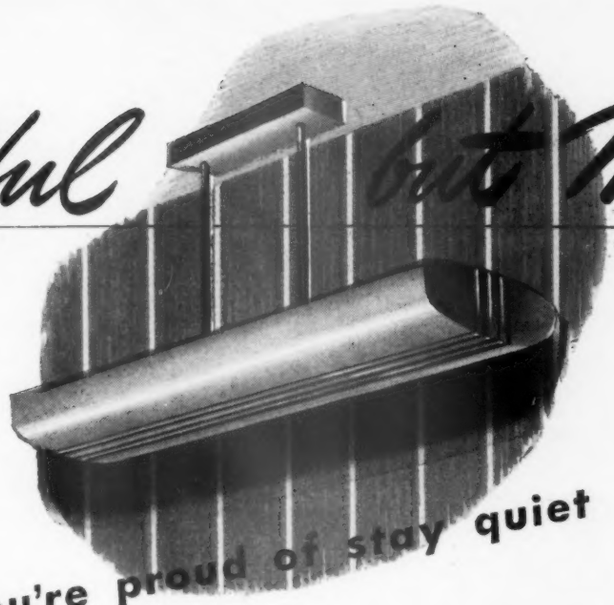


Pickler in operation at Superior Drawn Steel Co. plant, Monaca, Pa.

There is a minimum amount of chain used, hence replacement and repair costs for this item are kept low. In many cases, the pickler will do the work of two or three ordinary still pickling tanks, resulting in further savings. In addition, the pickler will handle a wide variety of shapes — bars, rounds, flats, squares, hexagons, and tubing. Another outstanding feature is its simplicity of operation and control. Chains and other exposed parts are made of alloy metals to provide strength for heavy loads, resistance to the severely corrosive action of the hot acid pickling solution, and resistance to wear.

(*Continued on page* 180)

Beautiful but Mum!



The fixtures you're proud of stay quiet when they're built with G-E BALLASTS

Your newest fixtures are something to be proud of. Their smooth-flowing lines will please any customer's eye. But can you be sure that annoying ballast hum won't assault his ear?

G-E ballasts are designed to solve this problem by keeping fluorescent fixture noise at practically inaudible levels. They will give years of the quiet service that is so important for concentration during working hours, for peace of mind in leisure moments, and for the customer satisfaction that means increased sales.

QUIETNESS IS BUILT-IN

G-E ballasts are quiet because the quality of the materials and workmanship that go into their manufacture is *controlled* every step of the way. Coils are machine wound for exact dimensions and sealed against vibration with a special clamping and compounding to assure long life and a uniform degree of quiet operation in every G-E ballast you buy.

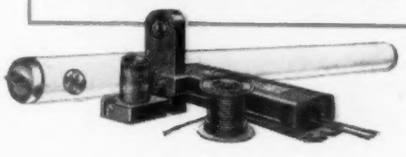
Cores are of low-loss steel, precisely stamped and stacked. Case and frame are designed to help you wire and mount quickly and easily. Every detail of construction is planned to help give better performance. It is these plus values of G-E ballasts that make them so popular with fixture manufacturers.

For more complete information get in touch with your nearest G-E office, or write to us direct. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

General Electric ballasts help keep fixture users satisfied...they mean Added Profits for You!

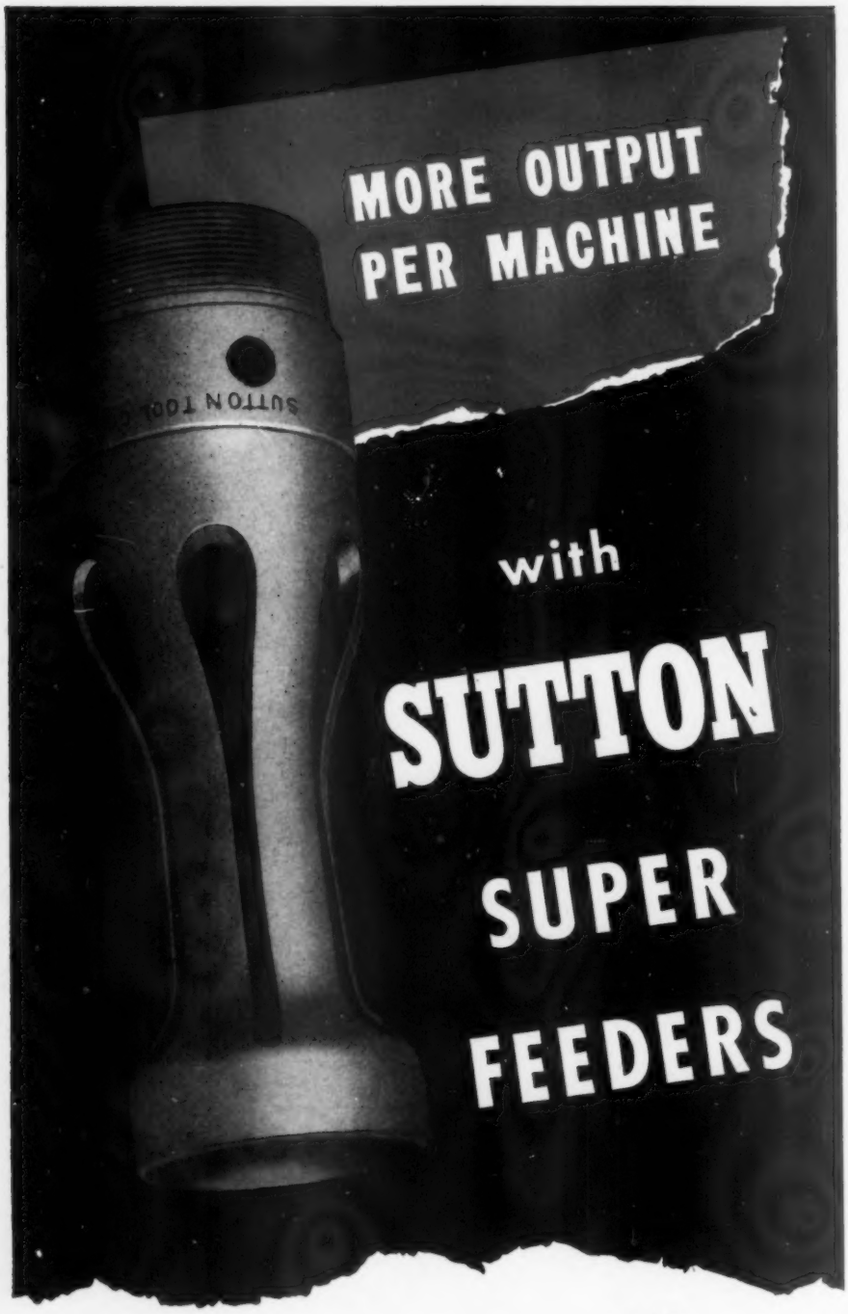
1. Low noise level—for satisfied users
2. Long life—for low replacement cost
3. Characteristics matched with lamp —for rated lamp life and light output

BALLASTS • LAMPS • STARTERS
LAMPHOLDERS • CABLE
For DEPENDABILITY in fluorescent lighting



GENERAL ELECTRIC

408-41-5205



- *Uniform grip* — less spoilage — longer tool life — lower tool cost.
- *Trouble free* — stock held by multiple steel springs in compression — a few hammer taps restore tension.
- *Adaptable* — handle round, square or hexagon stock with less marring — less wear — larger area of contact.
- *Economical* — cost no more than ordinary feeders — available in non-marring bronze.

SUTTON TOOL COMPANY
STURGIS, MICHIGAN

SUTTON ◈ COLLETS★

(*Continued from page* 178)

Although the design of the Weldco pickler has been standardized, it is possible to fit this equipment into any type plant. It can be built to any capacity, and the only tonnage limitation is the limit of the individual company's handling equipment.

A 4-page, illustrated booklet giving complete information is now available. Write to The Youngstown Welding & Engineering Company, 3700 Oakwood Avenue, Youngstown 9, Ohio,

FUEL CONSUMPTION LESS THAN GALLON PER HOUR

The Allis-Chalmers Manufacturing Company of Milwaukee, Wis., is resuming production of its "IB" air tired industrial tractor, which is shown in the accompanying illustration "switching a car" of boxes to the shipping room. The tractor has a speed of ten miles an hour, and this combined with stability

"I B" air tired tractor "switching a car" of boxes to the shipping room

and easy turning radius is of material advantage in stepping up hauling operations around the plant. It is used for spotting and moving of freight cars, to furnish power for air compressors, crushers and other types of equipment. A popular attachment is a power sweeper for general clean-up work. Other practical attachments are heavy duty mower, and V-type or straight blade snow plow. The straight blade may be used for light bull-dozing operations. Normal fuel consumption is said to be less than one gallon per hour.

BROAD DEFINITION OF FELT IS ADOPTED

After several years of tentative consideration, a broad definition of felt has been adopted by the Felt Association, Inc., 366 Madison Ave., New York, superseding all others, as follows:

"Felt, n. A fabric built by the interlocking of fibres by a suitable combination of mechanical work, chemical action, moisture and heat, without spinning, weaving or knitting. It may consist of one or more classes of fibres, wool, reprocessed wool and/or re-used wool, with or without admixture with animal, vegetable and synthetic fibres."

This definition meets the requirements of standard specifications and the Wool Products Labeling Act, it has been approved by the American Society for

(*Continued on page* 182)

SPECIALS!

. . . convincing evidence of manufacturing skill

● Industry today, more than ever before, has a definite need for many different types of non-standard fasteners . . . fasteners of unusual sizes, shapes and materials . . . fasteners which must be custom-made to perform vital jobs in complex manufactured products.

Typical of these "specials" are the stainless-steel-headed bumper bolts illustrated above.

The fact that all circle Ⓑ fasteners are controlled from billet to bolt in one single plant—*the largest independent in the country*—naturally makes the Buffalo Bolt Company the logical starting point for any producer with a nut or bolt problem.

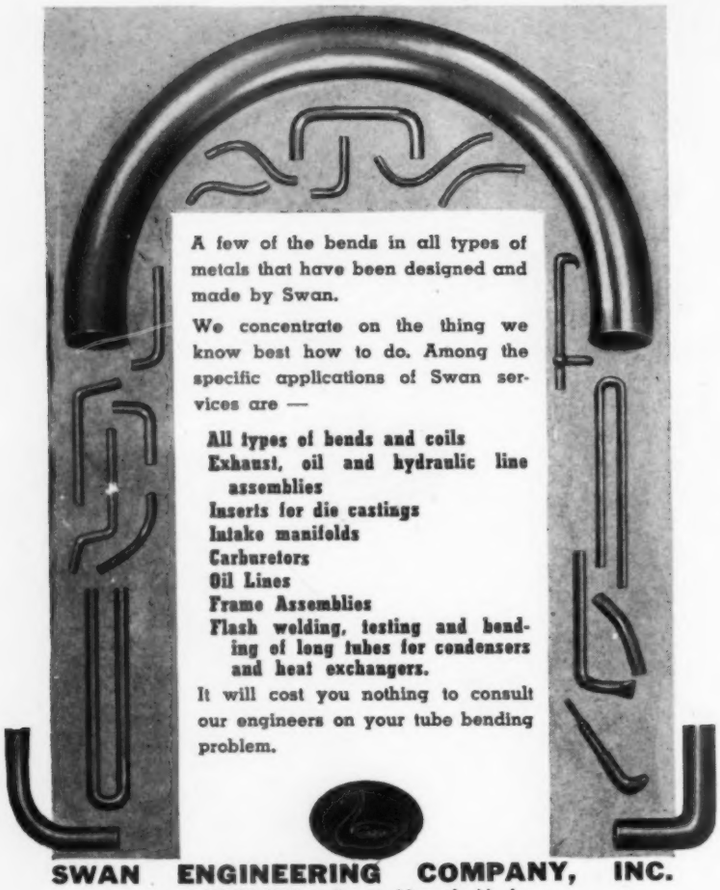
Standard or special, all circle Ⓑ products have the same uniform controlled quality that serves to make your production more efficient . . . less costly.

DID YOU KNOW *that each of this battery of Buffalo Bolt roll threaders has a capacity of 43,000 bolts per working day?*

BUFFALO BOLT COMPANY

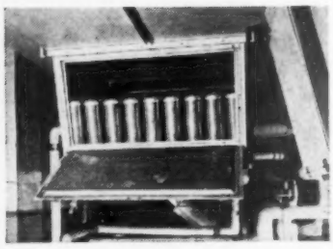
NORTH TONAWANDA, N. Y. • SALES OFFICES IN PRINCIPAL CITIES

Export Sales Office: Buffalo International Corp., 50 Church Street, New York City


A few of the bends in all types of metals that have been designed and made by Swan.
We concentrate on the thing we know best how to do. Among the specific applications of Swan services are —
All types of bends and coils
Exhaust, oil and hydraulic line assemblies
Inserts for die castings
Intake manifolds
Carburetors
Oil Lines
Frame Assemblies
Flash welding, testing and bending of long tubes for condensers and heat exchangers.
It will cost you nothing to consult our engineers on your tube bending problem.

SWAN ENGINEERING COMPANY, INC.
12-58 Nelson Street, Newark, N. J.

You save fuel, power and equipment when you save conditioned air



Dorex activated carbon canisters in air duct
One of the 30 installations in the Criminal Courts Building, New York

All ventilation is essentially the dilution of stale, odorous and contaminated air. Fresh air for that purpose can be obtained by purifying already conditioned return air with Dorex *activated carbon* Air Recovery Equipment. This can be done at a cost materially lower than the cost of drawing in and conditioning the quantities of outdoor air otherwise required.

The W. B. Connor Engineering Corporation maintains a research laboratory, a staff of trained specialists and district representatives in leading cities whose services are at the disposal of Consulting Engineers, Architects, Air Conditioning Distributors and Plant Engineers. They will be glad to give you the details on actual savings in typical installations or estimate the savings on any existing or planned system.

For full information and quotations on Dorex Equipment, call the nearest District Representative or write Dept. P-1.

W. B. CONNOR ENGINEERING CORP.

AIR DIFFUSION • AIR PURIFICATION • AIR RECOVERY

114 East 32nd Street — New York 16, N. Y.

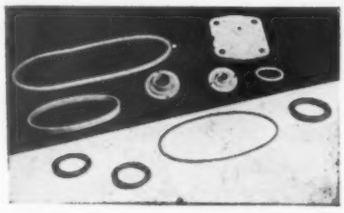
IN CANADA: Douglas Engineering Co., Ltd., 1405 Bishop St., Montreal 25, P.Q.

(*Continued from page* 180)

Testing Materials and distinguishes the true felt as a textile separate and distinct from felt-like materials, often miscalled "felt", which are produced by other means than the process known as felting, sometimes to the exclusion of the essential felting ingredient, wool. (felt Facts).

SILICONE RUBBER USED FOR BAKING OVEN GASKETS

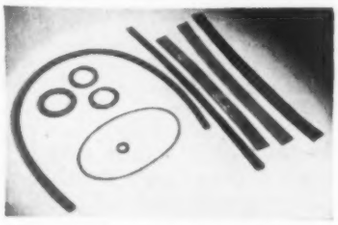
Notable improvements in gaskets for drying and baking ovens may be expected by the use of silicone rubber for these applications, according to engineers



Silicone rubber products are extruded in a variety of shapes and sizes.

of the General Electric Chemical Department, manufacturers and fabricators of the new material, Pittsfield, Mass.

Outstanding because of its heat resisting qualities and flexibility at both high and low temperatures, the new material will decidedly outlast ordinary rubber or a rubber-asbestos compound now commonly used on industrial heating ovens. Tests reveal that the hardness of silicone rubber increases slightly after a year's heating at 300 F but retains considerable flexibility. A G-E test of Buna S for 35 hours at the same temperature resulted in a hard surface, nonflexible material.



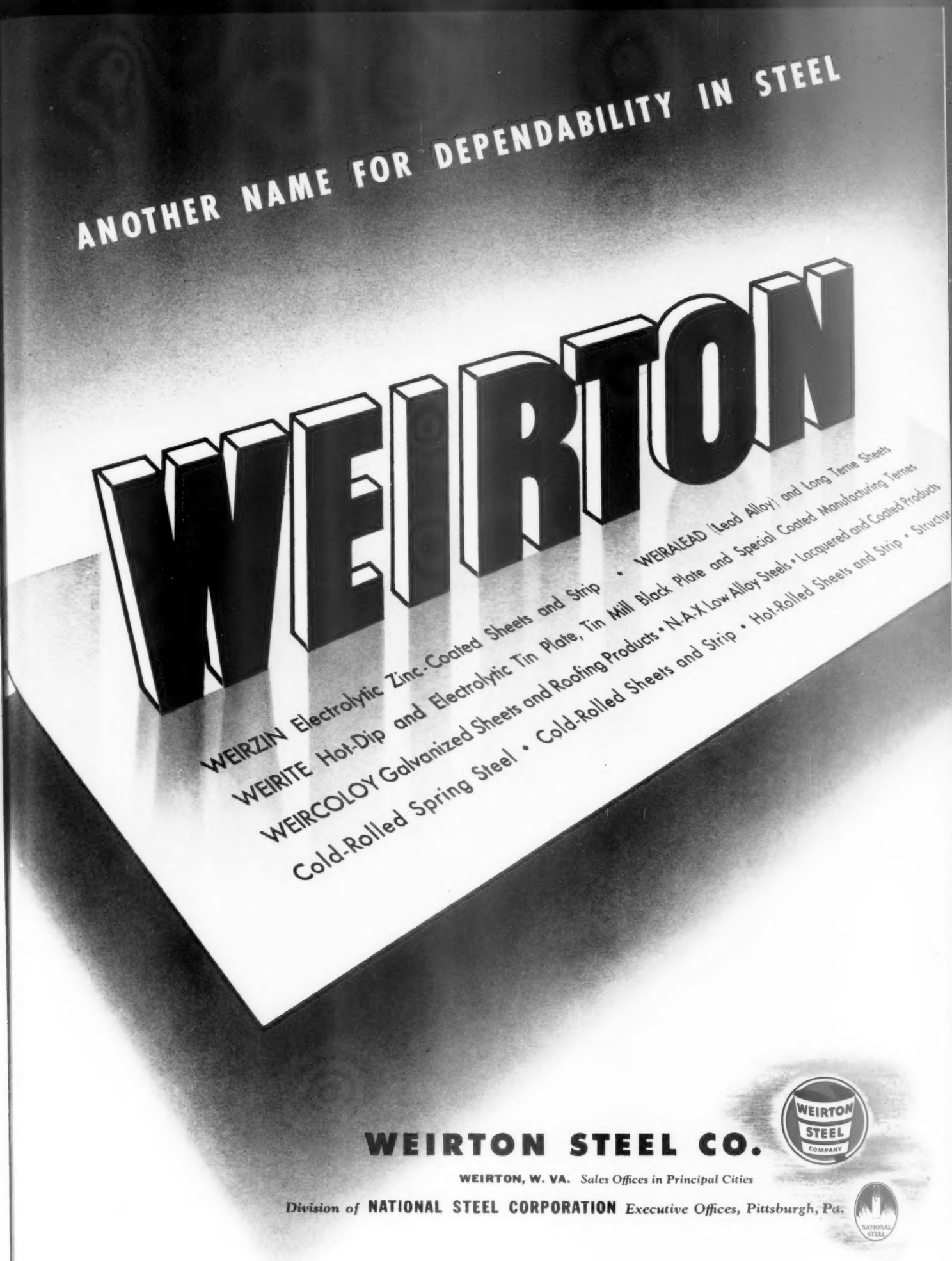
Shows fine heat resisting qualities and flexibility at high and low temperatures.

This resistance to heat, G-E engineers state, will markedly reduce the necessity of gasket replacements in the ovens.

Another feature of the silicone rubber is that it will not adhere to metal or any other material in spite of its continued use at high temperatures and under oxidizing conditions. This will eliminate the possibility of any vulcanizing action to metal when submitted to high temperatures. The chemical inertness of the silicone rubber is further evidenced by its non-gassing characteristics under high vacuum at elevated temperatures.

The General Electric Plastics Division, Pittsfield, produces silicone rubber in a variety of extruded shapes and sizes including round, square, flat and tubular.

(*Continued on page* 186)


ANOTHER NAME FOR DEPENDABILITY IN STEEL
WEIRTON
WEIRZIN Electrolytic Zinc-Coated Sheets and Strip • WEIRALEAD (Lead Alloy) and Long Terne Sheets
WEIRITE Hot-Dip and Electrolytic Tin Plate, Tin Mill Black Plate and Special Coated Manufacturing Ternes
WEIRCOLOY Galvanized Sheets and Roofing Products • N-A-X Low Alloy Steels • Lacquered and Coated Products
Cold-Rolled Spring Steel • Cold-Rolled Sheets and Strip • Hot-Rolled Sheets and Strip • Structur
WEIRTON STEEL CO.
WEIRTON, W. VA. Sales Offices in Principal Cities
Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.
WEIRTON STEEL COMPANY
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"The bigger the family—the better the service"

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C PAPER DIVISION

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PAPER DIVISION Headquarters
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COMBINATION PAPER AND METAL CONTAINERS

LIQUID-TIGHT FOOD CONTAINERS

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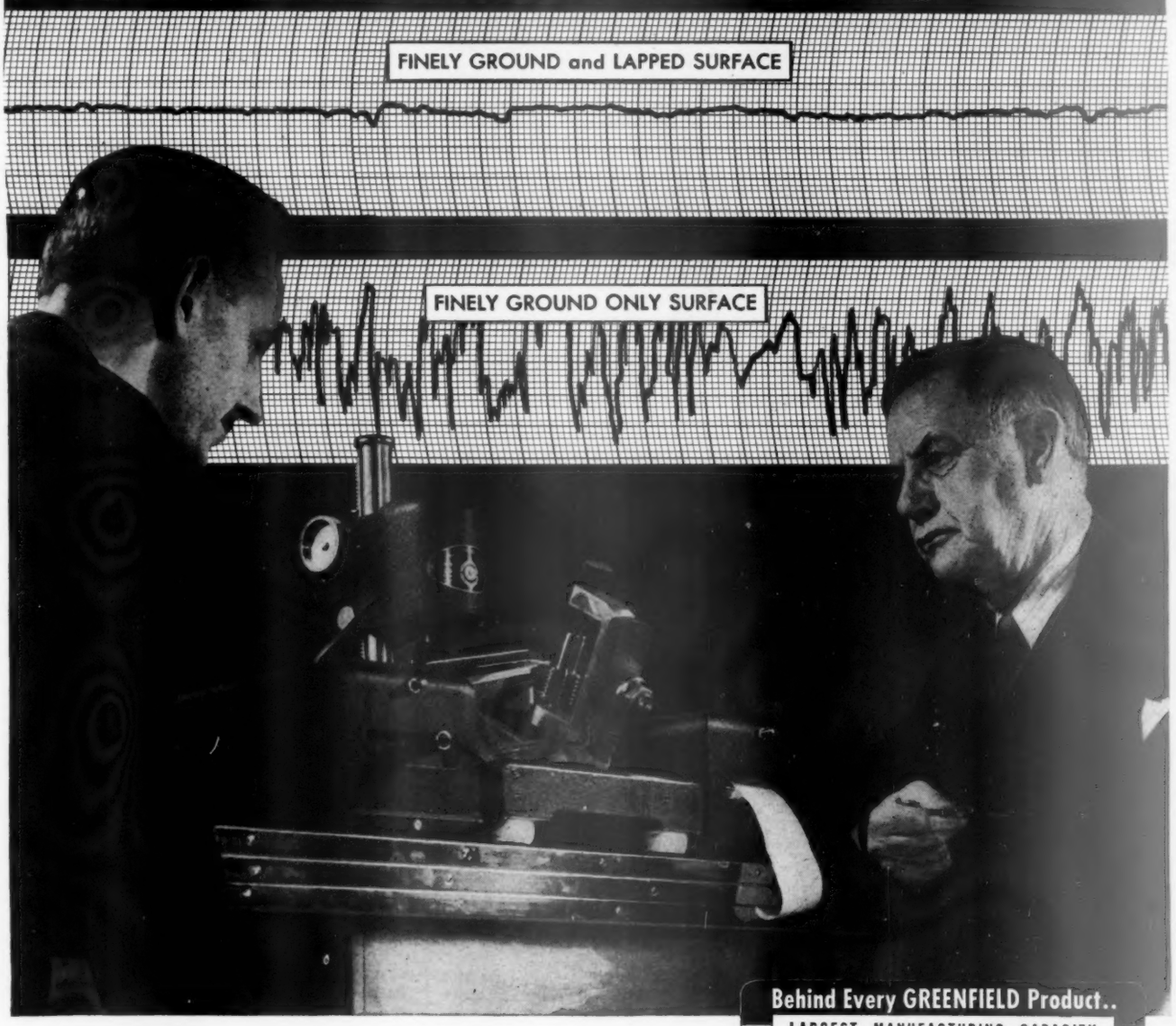
FIBRE DRUMS The Container Co., Van Wert, Ohio

18 Plants—Sales offices in all principal cities

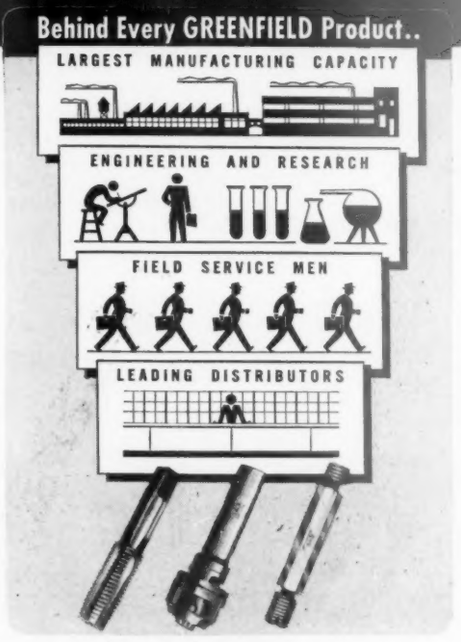
CONTINENTAL is a large family making a large variety of paper packages—liquid-tight paper containers and cups, fibre drums and cans . . . packages that will carry your product safely and economically. The famous Triple-C trade mark symbolizes one company with one policy —"best in *quality* and best in *service*".

Smoother Surfaces Give Longer Life



All "Greenfield" Gages have finely ground and lapped surfaces. To the casual eye, such surfaces look no different than if ground only. But the graph produced by the Surface Analyzing Machine illustrated above shows this difference clearly. To the gage user, this difference also becomes apparent—in terms of wear. A "Greenfield" Gage will give longer and more accurate service—and therefore better value—because of its finely ground ***and lapped*** surfaces.

It's "Greenfield's" attention to such unseen quality factors that give you ***more for your money*** when you use "Greenfield" Tools and "Greenfield" "Show-How" field service.



GREENFIELD

GREENFIELD TAP and DIE CORPORATION

GREENFIELD, MASSACHUSETTS

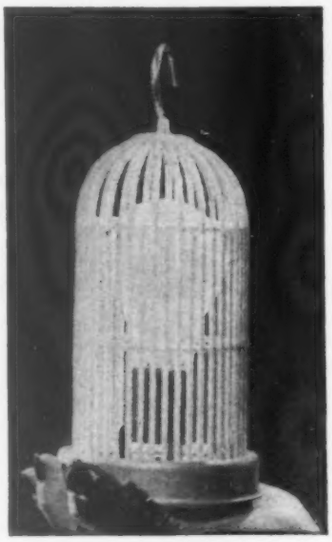
TRIPLEX
for Toughness!
CAP SCREWS IN ALL SIZES
Tensile strength and toughness are the things that count today in cap screws. Why accept anything less than TRIPLEX quality when you can now get these Cap Screws in all diameters up to 1" and various lengths up to 8". Available in Flat, Fillister, Button and Hex Heads.
Write for free wall chart. It will save you hours of time in making out purchase orders.
THE TRIPLEX SCREW COMPANY
5331 GRANT AVENUE • CLEVELAND 5, OHIO
TRIPLEX THREADED FASTENERS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

BOOKLET ON FLUORESCENT LIGHTING

"How to Get the Most From Fluorescent Lighting" is the title of eight-page illustrated booklet which contains a 13-point check to help select fluorescent fixtures that produce maximum lighting efficiency at minimum operating and maintenance expense, available from Day-Brite Lighting Inc., 5411 Bulwer Avenue, St. Louis, Mo.

DDT COATED LAMP FOR KILLING INSECTS

A new version of the moth to the flame story is provided by D. D. T. Lite, Inc., 3757 Wilshire Blvd., Los Angeles, Calif., by insect-killing lamp. The device for killing insects attracted to light



Electric light bulb with wire screen coated with D. D. T. crystals

consists of the usual electric light bulb with a wire screen coated with D.D.T. crystals. Moths, mosquitos, night-flying beetles and other bugs drawn to the light brush themselves off with D.D.T. and cease to be a problem, it is claimed. The company also is making D.D.T. snap-on screens which will fit bulbs already installed.

TRADE NAMES OF STAINLESS STEELS IN NEW RUSTLESS BOOKLET

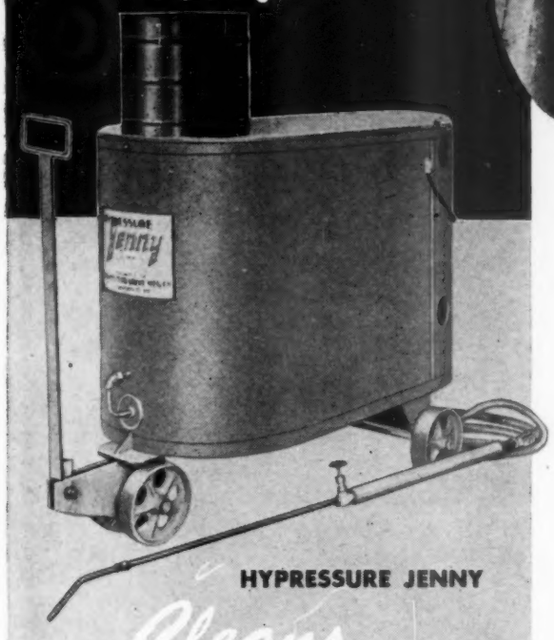
An attractive accordion-fold booklet, listing both former and present tradenames of stainless steels of all leading producers, has been issued by Rustless Iron and Steel Division, The American Rolling Mill Company, Baltimore, Maryland.

Stainless steels are broken down into straight chromium grades and chromium-nickel grades, and listed according to hardenability, Austenitic and Martensitic qualities, and machinability. The chart shows American Iron and Steel Institute types and analyses, by American Metals Society and American Society for Test-

(*Continued on page* 190)

TO REPAIR MACHINES up to 40% Quicker

Clean them first the JENNY "STEAM-SPRAY" WAY



HYPRESSURE JENNY

Cleans

Transformers	Hoists
Machinery	Floors
Engines	Buildings
Compressors	Conveyors
Trucks	Shafts
Windows	Tank Cars
Cranes	Walls

Skylights, etc.

"M" Pennant with two additional gold stars — Maritime's highest production award to our men and women making valves for the Victory Fleet.

HYPRESSURE JENNY steam cleaning of equipment before repairs cuts machine "down time" practically in half by saving 25% to 40% of mechanics' time usually lost wiping dirt and grease from machinery and tools. More production and considerable operating economy result. Besides, the thorough HYPRESSURE JENNY steam cleaning often discloses cracks and defects in vital production machinery permitting repairs before costly failures occur.

JENNY also keeps mill and factory floors clean for safe, rapid plant traffic . . . cleans windows, walls and other equipment 8 to 10 times faster than by any other known method . . . reduces fire hazards.

Cleaning is accomplished by a highly atomized mixture of steam, hot water and cleaning compound, applied under pressure through a spray nozzle. JENNY is extremely economical, and requires only ordinary plant labor to operate.

Write today for catalog showing Hypressure Jenny Steam Cleaner's many money-saving uses for you.

HYPRESSURE JENNY DIVISION OF

HOMESTEAD VALVE MANUFACTURING CO.

P. O. BOX 93 CORAOPOLIS, PA.

"Way back when," it was the watchmaker's eyepiece; today its the "Comparitor," shown above, which magnifies rack and pinion teeth fifty times. Faults can truly be seen . . . and corrected by machines that can't go wrong.

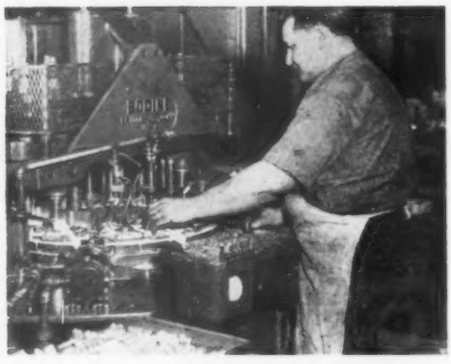
Craftsmanship . . . then and now

LONG AGO that fabled and revered craftsman, the "instrument maker," sought precision in pressure gauges and the like with the skill of his own Stradivarian hands. But although his praise has been sung across the years, his precision was only remarkable in relation to his methods.

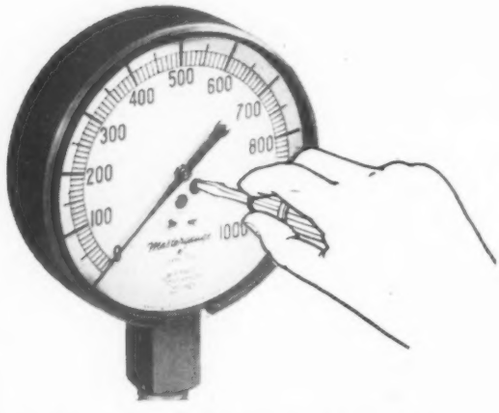
Today, greater precision — more lasting precision — is achieved on a production basis. This involves not only skill, but skill applied through highly specialized machines and highly organized methods.

The steps illustrated here are typical of many ways in which precision is attained in Marsh Gauges and Dial Thermometers. No Stradivari touch could achieve the precision found in the gears, pinions, staffs and bearings of Marsh Gauges that is attained by the special machines, jigs, fixtures, and production line testing that is employed in making them today!

Examine a Marsh Gauge. Observe its performance. You will then know the meaning of precision that can only be called Marsh!



"Way back when," it was slow hand drilling and filing and fitting; today machines like this perform many operations on the sockets, simultaneously and with unerring accuracy. Result: Greater precision at no greater cost.



Only Marsh has the "Recalibrator"—quickest and best way to correct a pressure gauge that has been knocked out of adjustment... finishing touch to a finer gauge.

JAS. P. MARSH CORPORATION
2054 Southport Avenue, Chicago 14, Illinois
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MARSH GAUGES
"THE STANDARD OF ACCURACY"

Extruded or die-cut rubber parts like channels, edging, stripping, cut washers, tubing, and gaskets?

We can make them for you—NOW.

If you need *any* rubber part—molded, die-cut, or extruded—big or small, simple or intricate, made to your specifications or from stock molds, write or wire The H. O. Canfield Company NOW.

if it's rubber . . .

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FREE—New H O. Canfield General Catalog illustrates thousands of rubber and synthetic rubber parts manufactured for the aviation, automotive, electrical, medical, plumbing, and general industry Send for your copy to-day

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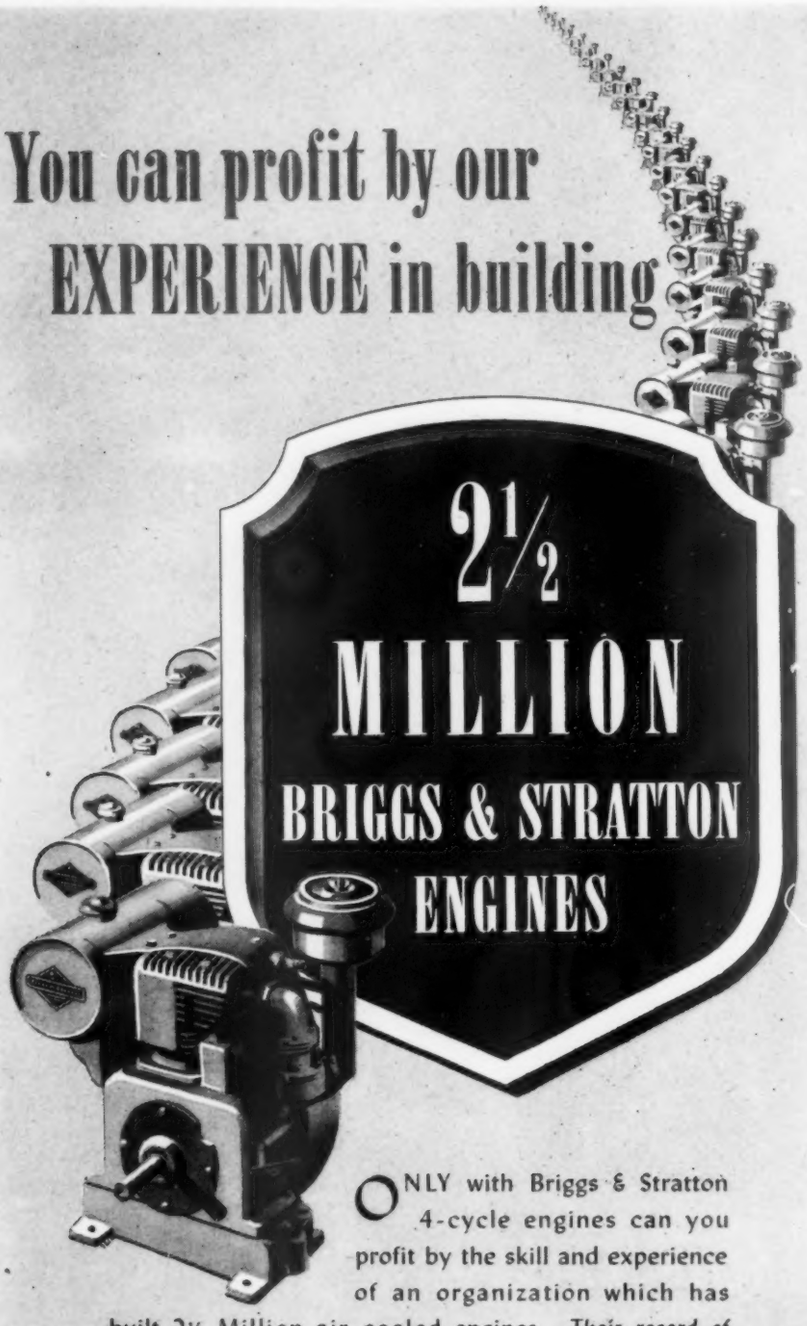
You can profit by our EXPERIENCE in building



ONLY with Briggs & Stratton 4-cycle engines can you profit by the skill and experience of an organization which has built 2½ Million air-cooled engines. *Their record of dependable performance* through the years is your assurance that "it's powered right when it's powered by Briggs & Stratton"—a factor of utmost importance to every user, dealer and manufacturer of gasoline powered appliances, farm machinery or industrial equipment.

BRIGGS & STRATTON CORPORATION • MILWAUKEE 1, WISCONSIN, U.S.A.

Air-Cooled Power

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

(*Continued from page* 186)

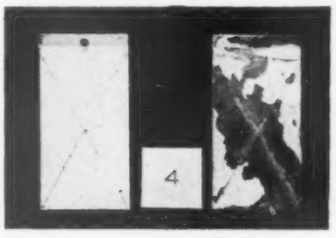
ing Materials designations, and by government specifications.

This new Rustless booklet is especially helpful to purchasing agents and engineers. Copies can be obtained without charge by writing to Rustless Iron and Steel Division, The American Rolling Mill Company, Baltimore 13.

NEW RUSTPROOFING TECHNIQUE

Calgon, Inc., Pittsburgh, Pa., has just announced a new low-cost rustproofing technique for steel and galvanized steel, known as the Banox process, which not only will protect metal during the manufacturing stages but permit a tighter bond with paints, and give it longer life through enhanced corrosion resistance.

The basis of this new chemical process is a flexible, glassy metal phosphate coating, so plastic that it will bend with the steel or permit die-stamping without harm to the coating. The coating, which has a thickness of from 5 to 15 millionths of an inch, may be put on by the spray, immersion, or brush methods. It requires no heat.



Panel on left was Banox treated before painting

The treatment of steel by the Banox process is said by Calgon, Inc., research men to accomplish four purposes:

1. Prevent rusting between cleaning and painting.
2. Insure a grease-free and alkali-free surface, providing for maximum adherence and flexibility of organic finishes.
3. Greatly increase the durability of the finish as measured by outdoor exposure, salt-spray, "sweat-box" humidity, and water immersion tests.
4. Prevents spread of rust from unprotected edges, scratches and other areas where the basis metal is exposed.

The surface of Banox-processed steel is relatively non-porous and high gloss smoother finishes are obtainable from thin paint films.

The new process has a number of advantages, according to the research men, over any existing process. It is simpler and more economical by reason of lower cost of chemicals per unit area of metal treated and lower steam or gas heating costs. Investment in equipment is less because the Banox solution is non-corrosive and heating elements are unnecessary. Maintenance costs also are lower.

The painted steel panels were exposed to a standard salt-fog corrosion test for 300 hours at 95° F. Panel on left was treated by the Banox process before painting.

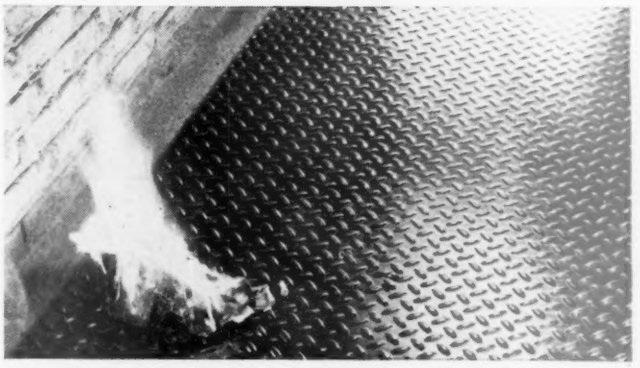
(*Continued on page* 194)

. . . with Inland 4-Way Floor Plate

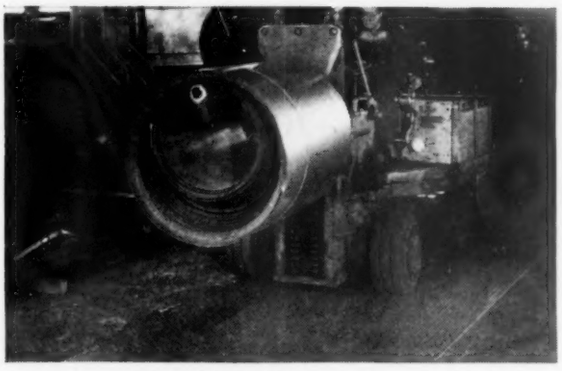
Any step by an employee that results in a slip or fall has its effect on your profit. The most important movement in your plant is—Production Steps! Steps that must be protected.

Farsighted management looks to Inland 4-Way Floor Plate, relies on it to safeguard those Production Steps . . . it's the sturdy faithful guardian of the men who "man" the production line.

Inland's safety floor plate, with its four-way lug provides a sure grip traction for foot and wheel on floors, walkways, ramps, platforms and steps—any place where accidents could occur.



Inland 4-Way is a protection against fire and heat—will not burn, warp or splinter. Cleans easily, drains freely, paints attractively.



Year after year, Inland Floor Plate carries heavy loads, stands up under the most punishing service.

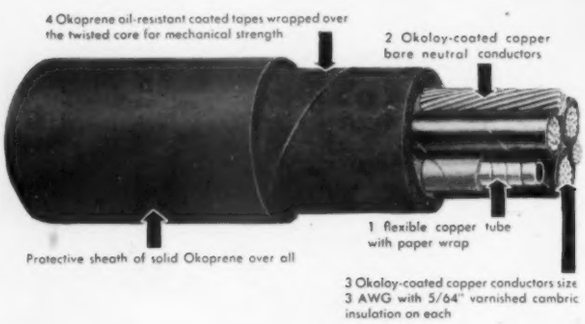
Made of hot rolled steel, Inland 4-Way Floor Plate practically eliminates maintenance—it won't burn, warp, crack, splinter or absorb liquids and odors. Easily installed and the essence of economy—once placed, Inland 4-Way Floor Plate is there to *stay!* Write today for your copy of the Inland 4-Way Floor Plate catalogue!

Inland Steel Company, 38 South Dearborn Street, Chicago 3, Illinois. Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

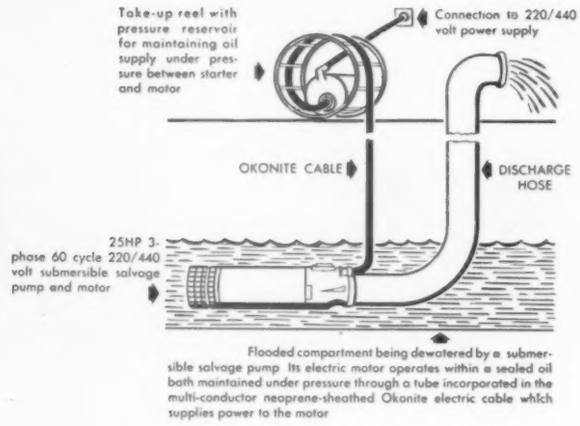
INLAND STEEL COMPANY

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • PILING • REINFORCING BARS • RAILS • TRACK ACCESSORIES

HOW "DOUBLE DUTY" OKONITE CABLE


4 Okoprene oil-resistant coated tapes wrapped over the twisted core for mechanical strength
2 Okolay-coated copper bare neutral conductors
1 flexible copper tube with paper wrap
Protective sheath of solid Okoprene over all
3 Okolay-coated copper conductors size 3 AWG with 5/64" varnished cambric insulation on each

. . . SERVES A SUBMERSIBLE PUMP


Take-up reel with pressure reservoir for maintaining oil supply under pressure between starter and motor
Connection to 220/440 volt power supply
OKONITE CABLE
DISCHARGE HOSE
25HP 3-phase 60 cycle 220/440 volt submersible salvage pump and motor
Flooded compartment being dewatered by a submersible salvage pump. Its electric motor operates within a sealed oil bath maintained under pressure through a tube incorporated in the multi-conductor neoprene-sheathed Okonite electric cable which supplies power to the motor

. . . an example of Okonite engineering cooperation

Okonite engineers are always ready to work with design engineers and others in solving individual problems by individual means. One typical example is the way they cooperated closely with a well-known pump manufacturer to develop a built-to-order kind of cable which supplies not only electrical power to the pump but also lubricating oil to its motor.

Specifically developed for use in submersible salvage duty, this double-service cable is water-tight from without, oil-tight from within, combining excellent electrical properties with thorough protection against leaks. Each submerged pump's electrical motor operates within an oil bath maintained under pressure through a tube incorporated in the multi-conductor neoprene sheathed Okonite electric cable. The success of this development was proved during wartime in the salvage of battle-damaged warships and earned a citation from the U. S. Navy.

Feel free to discuss your individual cable requirements in detail with an engineer of The Okonite Company, Passaic, New Jersey.

OKONITE SINCE 1878 insulated wires and cables

4596

Coasters or Speakers .....

COLGATE

"ENGINEERED SERVICE"

in Aluminum, Magnesium, Stainless Steel

SOLVES YOUR PARTS-PRODUCTION AND ASSEMBLY PROBLEMS

If your new or improved consumer product requires the mass-production techniques and specialized COLGATE facilities that produce these aluminum coasters by the millions . . . or if your industrial product calls for split-thousands accuracy, in large or small quantities, such as required in this radio speaker in order to assure perfect fitting and absolute interchangeability of the stamped, blanked, and formed chassis — *then it will be to your advantage to consult with COLGATE!*

The extreme range of specifications and the diverse use of these products are an excellent indication of the versatility and the broad range of scope offered by COLGATE'S "ENGINEERED SERVICE" to manufacturers of consumer and industrial products. From the initial rough-idea stage to final assembly, this unique and comprehensive service provides advance design and engineering aid in the form of *preliminary* conferences that solve your problems *before* designs have been started, also after blueprints have been prepared.

COLGATE'S sales-minded designers and engineers will help develop your new product ideas, improve old products by substituting Aluminum, Magnesium, or Stainless Steel for other materials and give your product these sales-building features — *lighter weight, added beauty, increased strength and durability, resistance to corrosion, thermal and electrical conductivity, improved product appearance and performance.*

COLGATE can help solve your problems and function as your "branch factory" by providing ample space, supplying the specialized skills and know-how for fast, economical fabrication and assembling of precision parts — and get your product to market faster by meeting delivery dates with dependable regularity. For immediate action wire or write, complete confidence assured, no obligation.

Completely centralized facilities include our own *tool* and *die shop* in addition to Hydraulic Presses 10 to 750 tons, and Mechanical Presses 2½ to 200 tons.

STAMPING • FORMING • DRAWING
WELDING • FINISHING • ASSEMBLING

COLGATE *Aircraft Corporation*

AMITYVILLE, LONG ISLAND . . . NEW YORK

LIGHT METAL PRODUCTS

THIS COMPOSITION

MADE INDUSTRIAL HISTORY

It made history—first because being industry's original *greaseless* finishing composition it revolutionized finishing methods; second because it was the forerunner of a technical service that has helped countless finishing departments improve operations and cut costs; and third, because it enabled war contract plants to meet extremely close tolerance requirements in polishing, buffing and burring.

MARK THIS BAR WELL

If the products you are making for the post-war market require finishing of any kind, the chances are a Lea Method making use of Lea Compound or Learok, the composition with no-free-grease, will be found best. Before determining your operating steps, why not ask for a Lea Method? If you wish, a field engineer will call in the near future or better yet, let our laboratory process your samples and return them to you with complete recommendations.

THE LEA MANUFACTURING CO.
WATERBURY 86 CONNECTICUT
Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

BOOKLET DESCRIBES GE PLASTICS DIVISION FACILITIES

The annual "One Plastics Avenue" brochure published by the General Electric divisions has just been issued. A 20-page booklet, done in four colors, it describes complete plastics facilities—research, development, design, engineering, moldmaking, manufacturing, compression molding, injection molding, laminating, and low pressure molding—performed by General Electric at One Plastics Avenue, Pittsfield, Mass. and its five other manufacturing plants throughout the country.

The brochure was designed by William B. Petzold, industrial designer of the General Electric plastics divisions.

CELANESE PLASTIC DUPLICATES TIRE WHITE WALL

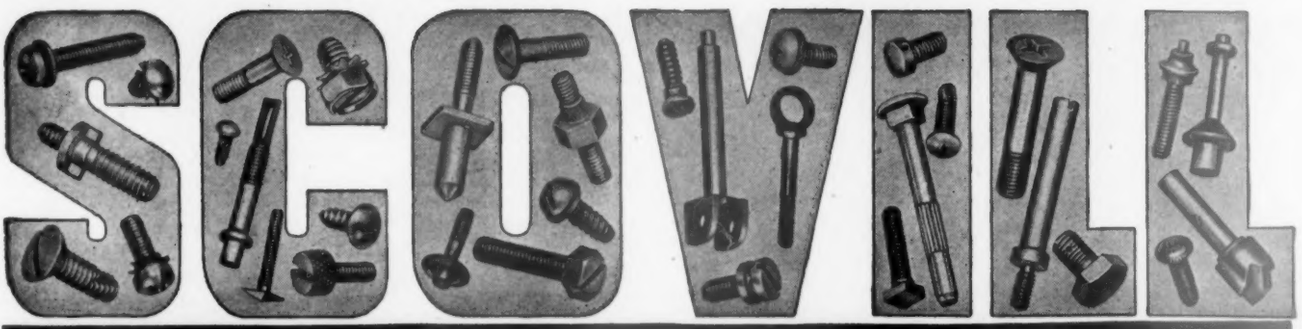
An innovation in automotive design, this formed disc of Celanese plastic duplicates the white wall tire and adds its own practical advantages. A permanent part of the wheel assembly, it can be used with any tire of corresponding size. It can be cleaned with a damp cloth, and will flex without breaking if the tire goes flat.

Plastic white wall—a permanent part of wheel assembly

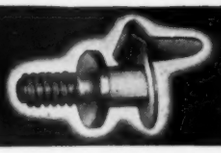
REPLACEMENT DOOR IS MOUNTED ON OUTSIDE

Replacement door that is installed by being mounted on the outside of the building is announced by the Fleming Steel Co., New Castle, Pa. In replacing an old door, manufacturer states that the installation is made without altering either the building wall or the original door space. The upper and lower sections travel vertically, and the door is said to operate in approximately half the time and space required by conventional industrial doors. In operation, counterweighted cables make the door easy to open by hand pulley either from inside or outside the building, or, it may be operated by an electric motor from one or more switch stations. The door can be installed in single, double, triple, or quadruple sections for any size door area.

(*Continued on page* 196)



SCOVILL GOT THE JOB . . . AND THE CUSTOMER GOT A SAVING!



was redesigned to...

Here's still another case where SCOVILL "know how" paid off in a substantial saving for the customer. And it could be that there's a saving for *you* in *your* fastenings problem as well.

The part at the left in the illustration is the pre-Scovill one. A screw and a clip had to be made and soldered together. A wire was then inserted in the clip and soldered there . . . costly soldering operations both in manufacture and assembly.

The manufacturer of this "filterette", a radio static suppressor, brought the headache to SCOVILL. The one-piece washer screw assembly to the right was the result—and the answer. One soldering operation was eliminated — and the insert-and-solder part of the assembly operation was reduced to a simple soldering job. The final box score was a stronger fastening — faster assembly — a neat overall saving.

It may be that folks sometimes get tired of hearing about SCOVILL "know how", but we have yet to meet the man who was tired of profiting by it. Talk over *your* problem with one of the offices below — perhaps we can help you too.

Proof #39 of SCOVILL skill

SCOVILL MANUFACTURING COMPANY
WATERVILLE SCREW PRODUCTS DIVISION

WATERVILLE 48, CONN. TEL. WATERBURY 3-3151

NEW YORK, Chrysler Building • DETROIT, 6460 Kercheval Avenue • CHICAGO, 135 South LaSalle Street • PITTSBURGH, 2882 W. Liberty Ave.
SYRACUSE, Syracuse-Kemper Insurance Building • LOS ANGELES, 2627 South Soto Street • SAN FRANCISCO, 434 Brannan Street

CESCO FOR STYLE

● Workers prefer to wear *good looking* safety equipment. Attractive styling goes into all CESCO equipment for good looks, for serviceability and comfort.

CESCO FOR COMFORT

● CESCO Safety Equipment includes *every comfort feature*—minimum weight, easy-resting contact points, ventilation, scientific forming, adjustable fit.

CESCO FOR SAVINGS

● Emphasis on *quality* makes CESCO products long-lasting and economical. Above all, CESCO *protects* workers from injury, *saves* life and precious eyesight.

CESCO FOR SERVICE

● You get *serviceable* CESCO equipment plus *service* of well qualified safety advisers. Addupstyle, comfort, savings, service—and your logical choice is CESCO.

CHICAGO EYE SHIELD CO.
2320 Warren Boulevard
Chicago 12, Illinois

CESCO
FOR SAFETY

LUMINESCENT "LUCITE" SHEETING ANNOUNCED

New forms of "Lucite" acrylic resin containing luminescent pigments—a fluorescent type which glows when exposed to ultraviolet, or "black" light, and a phosphorescent type which glows in the dark after exposure to ordinary light—were announced today by the Plastics Department of the Du Pont Company.

Indicating a promising future on highways, airlanes and sea lanes, the company said the phosphorescent "Lucite" is now being investigated by the U. S. Coast Guard for large bands on channel markers and buoys to light them at night without necessitating maintenance or replenishment of a power supply. The plastic has demonstrated durability on exposure to severe weather or salt water.

Sheets of "Lucite" containing luminescent pigments called phosphors are now being produced on a small scale, the company said, and are being evaluated for night use, both indoors and out.

The afterglow of this phosphorescent sheeting is claimed to be outstanding in the field of plastics. After exposure to light, the sheeting gives light of maximum brilliance for a matter of minutes, and then continues for ten or twelve hours to give light sufficient to be seen by an eye adapted to the dark. The fluorescent sheeting, on the other hand, does not necessarily store light, but glows brilliantly while subjected to ultraviolet light, commonly called "black" light.

Sheeting of both types is expected to be used in advertising signs. Other potential uses include parts of lamps, baseboards, and panels for light switches used in bedrooms, directional signs of all types, house numbers, Christmas-tree ornaments, dial faces and airplane instrument panels, theatre exit signs, parts of radios and television sets, architectural panels, and entire walls and sections for bars.

The sheets can be manufactured in a wide range of colors, in all of the standard sizes of regular "Lucite" sheeting, and in a range of thicknesses.

* * *

DIESEL ASSOCIATION REVISES BOOK "STANDARD PRACTICES"

Because of progressive developments in the Diesel engine manufacturing industry during the last decade, it has become necessary to revise the book, "Standard Practices", printed in 1935 by the Diesel Engine Manufacturers Association, 1 No. LaSalle St., Chicago.

The new book is the product of member companies of the Association, which coordinated their engineering and sales departments and delegated representatives to rewrite the former treatise. The content of the former "Standard Practices" was completely rewritten.

Chapter headings of the new book, titled "Standard Practices for Stationary Diesel Engines", give an idea of its scope: "Definitions", "Standard Performances and Equipment", "Diesel Engine Construction", "Governors and Speed Regulation", Torsional Vibrations and Critical Speeds", "Intake and Exhaust Systems", "Cooling Water Systems", "Lubricating. Oil Systems", "Fuel Oil Storage and Handling", "Generators and Electrical Equipment", "Selection of Engine Sizes", "Diesel Power Plant Buildings", "Erection of Diesel Engines", "Lubricating Oil Characteristics", "Fuel Oil Characteristics", "Field Test Code" and "Suggestions for Bids and Specifications." The book is priced at $2.50.

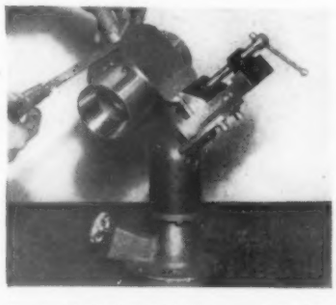
* * *

POSITIONS WORK 360° IN ANY DIRECTION

Illustrations show the Powrarm, hydraulic work holder and positioner made by the Garfield Engineering Corp., 124 South Market St., Wichita, Kans., which enables a workman to position his work 360° in any direction and leaves both

Arm may be moved in 90° arc from horizontal to vertical position.

hands free to perform his job, this being made possible by the application of hydraulic pressure against a ball and socket joint. Pressure exerted up to 6000 lbs. p.s.i., is controlled by pressure knob. Arm may be moved in 90° arc from



Leaves both hands free to perform job.

horizontal to vertical. The head may be turned in a complete circle to place work on any horizontal plane desired. Hydraulic pressure firmly locks head and arm in any position. Work adapters are removable; shop may devise adapters or work holders. The Powrarm may be used for welding, soldering, boring, testing, inspecting, holding jigs, disassembly, and so on.

(*Continued on page* 198)

GENERAL ELECTRIC

Announces . . .

NEW

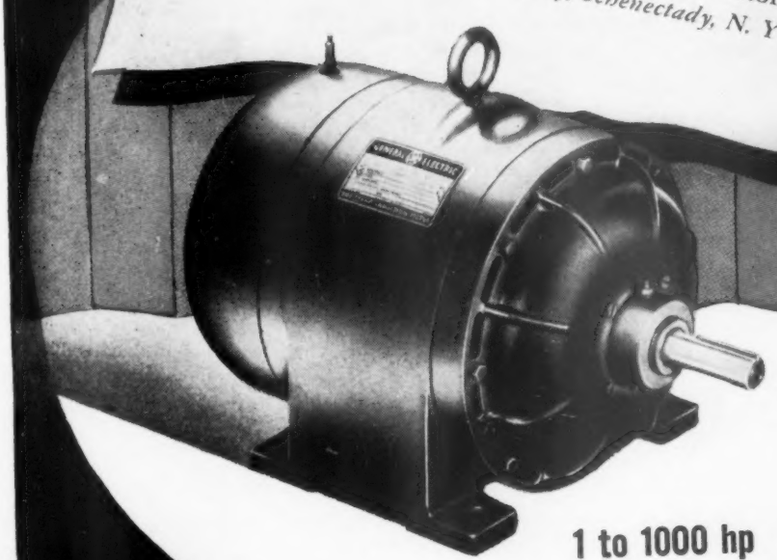
Totally Enclosed TRI CLAD MOTORS

In 1940, G.E. introduced the Tri-Clad open motor—with emphasis on the feature that industry wanted most in a motor, *protection.* Since then, more Tri-Clads have gone into service than any other integral-horsepower motor.

Today, we are ready with a new line of Tri-Clad motors—*totally enclosed, fan-cooled motors*—built on Tri-Clad design principles in both standard and explosion-proof types.

We believe that these are industry's most dependable motors. They are designed specifically for use in many adverse atmospheres—in iron dust, outdoors, in hazardous areas, and chemical atmospheres. Their scope of application is as wide as the field of industrial motor use. Safe-guarded against most sources of motor damage, their longer life and lower maintenance will make them economical motors for use on almost every job. *General Electric Company, Schenectady, N. Y.*

750-260-8030



1 to 1000 hp

COMPLETE ENCLOSURE FOR PROTECTION AGAINST DIRT, DUST, AND WEATHER

One thumb to a hand

is enough!

A WORK-GLOVE that makes every finger a thumb, makes mockery out of safety! For safety starts with a sure, firm grip . . . a flexibility that allows quick, certain use of the hands in every situation. That's why workers in every phase of industry *like* JOMAC Industrial Gloves. These remarkable gloves make for flexibility right down to the finger-tips!

What's more, JOMAC Industrial Gloves give longer-wearing protection against hand-hazards of every kind . . . biting edges, rough surfaces, blistering heat. There is a scientific reason for this better protection, for the *longer life* you find in JOMAC Industrial Gloves. JOMAC's famous fabric is composed of hundreds of "cushions" . . . protective "air-cells" locked securely into place by a hidden stitch.

Yes, JOMAC Industrial Gloves give *longer life* . . . up to *7 times* the wear of ordinary work-gloves! Washable, they can be laundered repeatedly and used over and over again. That's glove-economy in anybody's language! For full details, write today to C. Walker Jones Co., 6135 N. Lambert St., Philadelphia 38, Pa. Plants in Philadelphia, Pa., Detroit, Mich., and Warsaw, Ind. *Foreign Representatives:* Gillespie & Co. of New York, Inc., 96 Wall Street, New York 5, N. Y.

"SHAKE HANDS WITH SAFETY"

JOMAC INDUSTRIAL GLOVES

THREE TYPES OF JOMAC GLOVES

REGULAR INDUSTRIAL TYPE • HEAT- AND FLAME-RESISTING

SAFETY GAUNTLET-CUFFS

FASTENER FOR REMOVABLE AND HINGED PANELS

A simplified, light duty quick-operating fastener designed for use on removable and hinged panels wherever accessibility for inspection, oiling, adjusting, cleaning or servicing is required, is being introduced by Shakeproof, Inc., 2501 No. Keeler Ave., Chicago, Ill. It is known as the Shakeproof Q-Two. It consists of three parts—a stud which is held onto the outer sheet by a special spring washer, and a receptacle which is easily snapped onto dimpled inner sheets or frames. Other features include allowance for variations in sheet alignment up to 1.8 inch, compensation for variations in sheet thickness, elimination of rivets and screws, and positive locking with one-quarter turn.

TEXTOLITE FOLDER SHOWS EIGHTEEN TABLE AND COUNTER TOP PATTERNS

Eighteen different patterns of decorative surfacing materials of G-E Textolite for table and counter tops are shown in a new color folder issued by the Plastics Divisions of the General Electric Company, Plastics Ave., Pittsfield, Mass. Listed also are the advantages, recommended uses, properties, grades, and sizes of the material.

COMPRESSION TEST STANDARDS CORRUGATED FIBERBOARD BOXES

The Container Testing Laboratories, 42 East 22nd St., New York, have prepared a complete and detailed set of compression test standards for corrugated fibreboard boxes. These standards are based on the results of tests made over a period of several years on boxes from a wide cross-section of the industry and covering a wide range of sizes, shapes, flutes and materials. These standards are contained in a set of graphs, charts and tables which show the appropriate correction to be applied for each of the several variables and combinations of variables of construction and materials. It is impractical and unnecessary from the Laboratories' standpoint to attempt to reduce these data to a single table or chart. However, in order to provide manufacturers and users of these containers with some guide for the purpose of evaluating container rigidity, the Laboratories have prepared a set of relatively simple formulas which will give a fairly close approximation of the expected compression load for boxes made of minimum strength materials.

These formulas should be applied only to boxes which have been exposed to an atmosphere of 65% Relative Humidity and 70°F. prior to testing.

Top-to-Bottom Loads

For boxes having top perimeter of 25" to 65", multiply perimeter in inches by 8 and add 265

(*Continued on page* 200)

SLIPPERY FLOORS GAVE MR. HIGBY THIS JOB

Today Mr. Higby is typing his own letters. Mr. Higby never realized what a good secretary he had . . . until a fall on the slippery floor put her out of action with a sprained ankle.

Slippery floors are a constant threat to workers, who cannot be spared. Yet unsafe floor maintenance is tolerated in many otherwise efficient offices.

This situation is examined in our little book, "Mr. Higby learned about Floor Safety the *Hard* Way." It analyzes the "hidden cost" of faulty floor maintenance methods. It shows why corrective action must be initiated by *top management officials*. Then it goes on to explain how the LEGGE System makes walkways safe . . . and at the same time improves floor appearance while actually *reducing* maintenance costs. You will be interested in reading this book. Sign and mail the coupon for your copy.

LEGGE SYSTEM of Non-slip FLOOR MAINTENANCE

PIN TO YOUR LETTERHEAD
and mail for complete information

WALTER G. LEGGE CO., INC.
11 W. 42nd St., New York (18), N. Y.
360 N. Michigan Ave., Chicago 1, Ill.
Branches in Principal Cities

Gentlemen: Please send your free book, "Mr. Higby learned about Floor Safety the *Hard* Way."

Attention of_____ Title_____ P-6

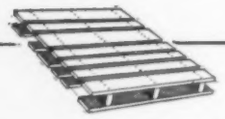
For fast corrective action, dictate a note to us stating approximate area and types of flooring. Describe briefly maintenance methods now employed and add particulars about any specific slip hazards encountered on your premises.

Footnote—

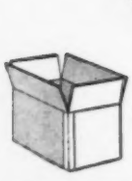
ON A GENERAL PACKING PRINCIPLE

NEW
"GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.



"Generalift" Pallet



General Corrugated Box

Good shoes provide support, snug fit, and positive protection. Likewise, *good* containers (GENERAL Engineered Shipping Containers) are designed specifically to the product, for the product!

They're engineered to faithfully follow the profile of the product. Frequently, special inner-packing, blocking and reinforcement, provides added protection . . . prevents shifting and costly damage in transit.

Write us today. Our engineers will be glad to study your packing problems. They are experts in the scientific packaging of all types of products—from tiny precision parts to huge assemblies.

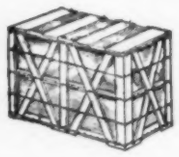
Let us show you how GENERAL Engineered Shipping Containers cut costs, speed production, save space, and conserve man-hours! It's the *big* story, the *profit* story, behind our "Part of the Product" Plan.

NOTE: Shortage of timber products today is even more critical than during the war. This is due to adverse weather conditions, labor difficulties, pricing maladjustments, war-marking and priority of lumber for erection of homes for veterans, etc. For these reasons, we, like so many others, cannot guarantee production and shipment in terms of usual schedules.

General All-Bound Box

General Nailed Box

General Cleated Corrugated Container



General Wirebound Crate

ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

(*Continued from page* 198)

For boxes having top perimeter of 66" to 100", multiply perimeter in inches by 5 and add 465

End-to-End Loads

For boxes having end perimeter of 25" to 49", multiply perimeter in inches by 12

For boxes having end perimeter of 50" to 69", multiply perimeter in inches by 6 and add 290

For boxes having end perimeter of 70" to 100", multiply perimeter in inches by 3 and add 480

The above formulas are for A-flute corrugations. For boxes with B-flute corrugations use same formulas and multiply resultant top load by .80 and end load by 1.20. For C-flute multiply top load by .90 and end load by 1.10.

It is to be emphasized that these formulas are intended only for 175# and 200# boxes of the more commonly encountered sizes and shapes. They should not be applied to boxes in which the depth is greater than the length or in which the depth is more than one and one-half times or less than two-thirds the width. The standards for such boxes or for boxes with 275# or 350# certificates require the use of correction factors. The Container Testing Laboratories will be glad to furnish the corrected standard for any specific box upon request.

NEW ROLLER THRUST BEARING

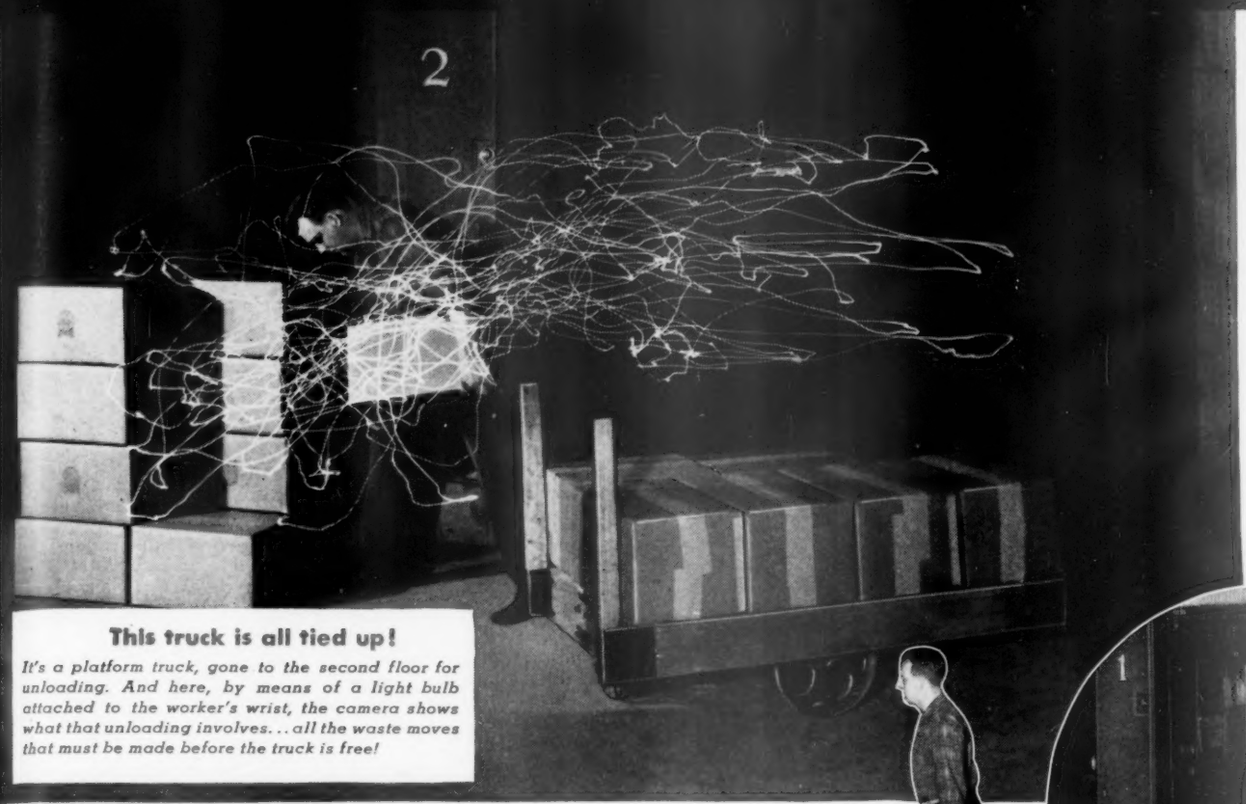
Development of a new type of roller bearing capable of carrying heavier loads at higher speeds and lower temperatures — heretofore a "missing link" in the chain of anti-friction bearing evolution, is announced by SKF Industries, Inc., Philadelphia, Pa.

William L. Batt, president of the company, said the new development, technically known as a spherical roller thrust bearing, climaxes a 10-year research program to solve the difficult problem of combining in a single bearing the triple features of high-load capacity, speed and low temperature.

"The new-type spherical roller thrust bearing is expected to facilitate wind tunnel operation for research into such aeronautical projects as gas turbine and jet propulsion speeds and designs," he explained. "It will also ease maintenance and operating problems on large vertical water pumps, electric generators and other high-speed machines."

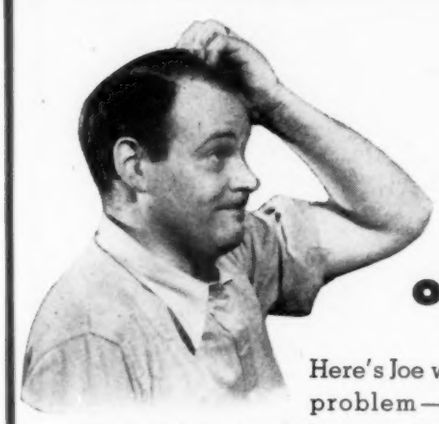
Other important applications of the new development, he added, are as thrust blocks on marine propeller shafts, on roll necks in steel and aluminum rolling mills, and as thrust mountings for railroad turntables, water turbines, water wheels, oil well swivels, dredge pumps, extrusion machinery for plastics and rubber, and various types of gear drives.

The bearing's self-aligning principle which compensates for any shaft deflections, distortions or weaves permits heavy loads to be distributed evenly over all rollers and eliminates danger of overloading, Mr. Batt said. Because of its compactness, it utilizes less space and is lighter in weight than a plain bearing.



This truck is all tied up!

It's a platform truck, gone to the second floor for unloading. And here, by means of a light bulb attached to the worker's wrist, the camera shows what that unloading involves... all the waste moves that must be made before the truck is free!

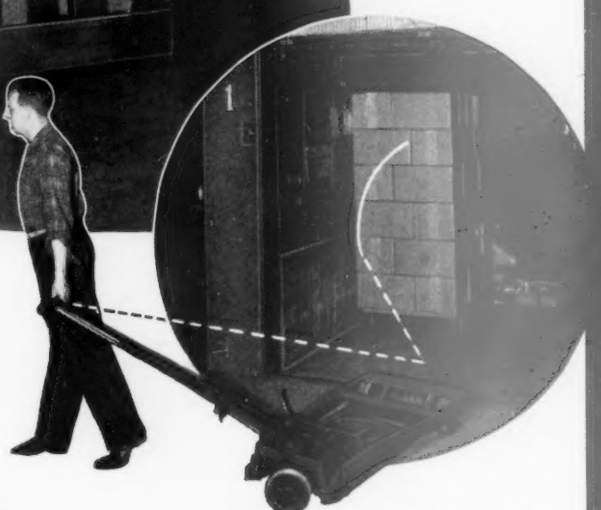


New Light on an Old Problem!

Here's Joe with an old problem—a load to move and no truck to move it. The truck he wants is upstairs—*loaded*. And here, in this authentic camera study, you see what must be done before he gets it back . . . all the waste time and effort of unloading piece by piece, only to *re*load the same materials next time they're needed!

You can eliminate all this piling and unpiling—and keep your trucks always ready for action! For with Barrett Lift-trucks and Skids, the Skid stays with the load, keeps it as a unit, while one simple move sets the Lift-truck free!

In moving materials from room to room, floor to floor, or in and out of trucks, the Barrett System enables *one man* to do more than *3 or 4*. Your Barrett engineer will gladly show you how—no cost or obligation.



This truck is ready for action!

It's a Barrett Lift-truck, leaving the elevator after depositing a loaded Skid. With one simple move, the Lift-truck rolls out for more action . . . while a second Lift-truck meets the up-going load!

Send for your free copy of the Barrett Junior Catalog .. 147 pages, with a cost-saving tip on every page!

BARRETT-CRAVENS COMPANY
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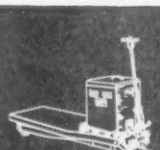
ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT

Barrett Handling Equipment

PORTABLE ELEVATORS

STEEL STORAGE RACKS

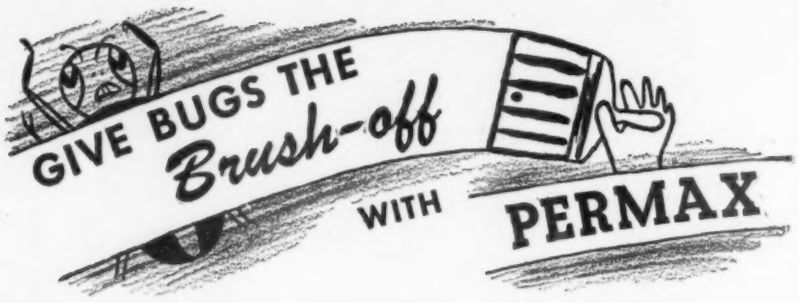

ELECTRIC LIFT-TRUCKS

HAND LIFT-TRUCKS

SKIDS

BARREL TRUCKS

NIFTY SYSTEMS



Permax, the residual insecticide containing 5% DDT, is effective, long-term insurance against flies, ants, mosquitoes, moths, bedbugs, fleas, lice roaches and many other insect species. Brushed or sprayed onto surfaces in infested buildings, its durable DDT film retains its killing power for months. One gallon of Permax covers an average of 950 square feet.

Permax handles well in any season, does not separate in cool weather—a high auxiliary solvent prevents DDT crystallization. Permax contains a rust inhibitor to protect your sprayers and containers.

Tested directions for Permax vermin control are offered in folder 1245-J.

PERMAX

The C. B. DOLGE CO. WESTPORT, CONNECTICUT

DEATH TO DISEASE DOLGE

METHOD FOR LOADING PRESSURE LUBRICATING GUNS

Loading of hand guns, long a vexing and often wasteful problem to users of pressure lubrication systems, has been resolved into a simple, clean, quick operation by new equipment just announced by the Alemite division of Stewart-Warner Corporation, Chicago.

The new method eliminates disassembly of the hand gun, precludes danger of lubricant contamination or waste, eliminates annoyance of air pockets in the gun and permits gun loading in a few seconds rather than the several minutes required by previous methods, engineers declare.

A new "gun-loader fitting" which is mounted on the head of a hand gun and permits grease to flow INTO the grease reservoir of the gun in the same manner that it flows into a bearing through a lubrication fitting in normal lubrication, is the key innovation of the new gun-loading system. A loader valve mounted on a bucket pump or loader pump, functioning in the same manner that a coupler does when applied to a fitting, is the companion item to the loader fitting on the hand gun.

"Gun-loader fitting" on head of hand gun permits grease to flow into grease reservoir.

While several hand guns, both push-type and lever-type, as well as loader pumps of 25, 35, 100 and 400 pound capacity, all equipped with the special fittings and facilities required by the new gun loading system, were announced as ready, users of guns and bucket pumps already in the field can "convert" their equipment to the new system.

In addition to the new guns and pumps, a loader valve, No. G-306740, to convert present guns to loader operation is available. It can be installed in either lever type or push type guns simply by drilling and tapping ⅛ inch pipe thread.

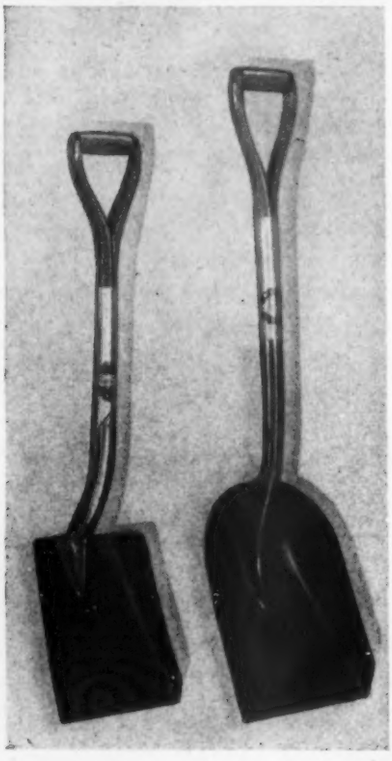
A loader kit, No. G-306910, containing all necessary parts to convert any bucket pump into a loader, and including one loader fitting for a hand gun, is also available. A bracket to hold a gun on the side of the bucket is also included in this kit.

* * *

DEVICE FOR TESTING CONTAINERS

Device for testing containers known as the Acme Drop Tester, and which

(*Continued on page* 206)



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TO THESE

GOOD BUYS

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SHOVELS

Get acquainted — right now — with Ingersoll shovels. The *only* shovels, spades and scoops made of Tem-Cross Tillage Steel — with blade edges GUARANTEED NOT TO SPLIT. Electrically heat-treated for springy ruggedness. Smooth polished hardwood handles. Specify Ingersoll — "A Borg-Warner Product" — for *all* your shovel needs.

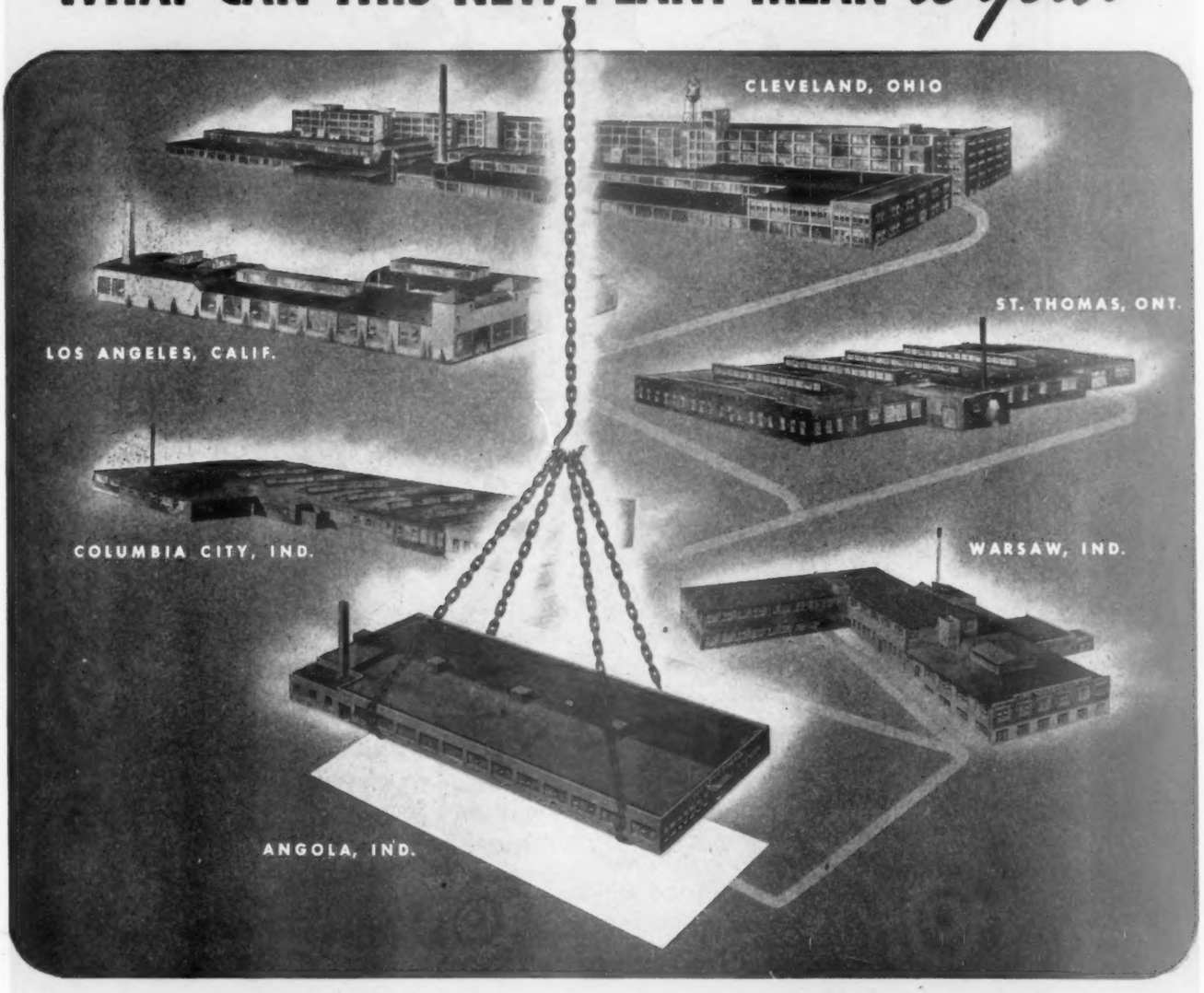
INGERSOLL STEEL DIVISION
Borg-Warner Corporation
New Castle, Indiana

Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

All blade finishes now black except Molders' Shovels and Grain Scoops, which may be furnished with either face or back polished.

INGERSOLL *Shovels*

WHAT CAN THIS NEW PLANT MEAN *to you?*



"Look Ahead with Weatherhead"... is more than just a slogan with us!

Progressive planning is as much a part of our business as the production of precision products. Typical result of this policy is the opening of the new Weatherhead plant located at Angola, Ind.

This newest of six Weatherhead plants is important to us . . . can be important to you. For, when Weatherhead customers make use of these increased production facilities, they gain much more. In addition to securing a dependable source for high quality products, Weatherhead's complete staff of research and design technicians stands ready to help you in every way possible.

It is the responsibility of these men to devote their experience and knowledge to improving Weatherhead products so they will contribute to the better performance and dependability of our customer products.

These facilities and services can benefit you..write us today about your problems.

Weatherhead Products Include:

FITTINGS
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VALVES
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YOUR ROPE

When he tells you to take good care of the ropes you now own—make them last longer—avoid putting them to excessive loads—keep them protected from weather, heat, water and chemicals. For rope is very scarce.

Why the rope shortage? Because a world starved for rope during the long war years now faces a limited supply of fibers from the Philippines, none from the Dutch East Indies, and drouth-reduced crops from other fiber-producing areas.

Good rope is valuable. It may be almost irreplaceable for months to come. Plymouth—world's largest rope-maker—is doing its best to allocate its restricted production of fiber ropes fairly among marine, industrial, farm, fishing and other users, and to help you make your present ropes last as well, as safely and as long as possible.

IN THE MEANTIME, Plymouth Research is constantly on the job—developing new types of ropes, new methods of making ropes last longer, new ways to improve the quality of ropes made from natural fibers, and synthetic materials such as Nylon, Saran and glass. Your own supplier can help you to enjoy the benefits of Plymouth technical experience in making the best possible use of available ropes.

Plymouth Cordage Company, Plymouth, Massachusetts. District Offices: 296 State St., Boston 9, Mass.; 420 Lexington Ave., New York 17, N. Y.; 105 W. Adams St., Chicago 3, Ill.; 1006 Washington Ave., Houston 2, Texas; 70 Sacramento Street, San Francisco 11, Calif. In Canada: Mill, Welland, Ontario; Sales Office: Cordage Distributors Limited, 500 King St. West, Toronto 2, Ontario.

PLYMOUTH *CORDAGE PRODUCTS*

ROPE—TYING TWINE—HARVEST TWINES

THE ROPE YOU CAN TRUST BECAUSE IT IS ENGINEERED

SUPPLIER IS RIGHT!

HERE'S HOW YOU CAN MEET YOUR OWN ROPE SHORTAGE!

Send Coupon Today for this Valuable Plymouth Guide-book, or Ask Your Supplier for a Copy!

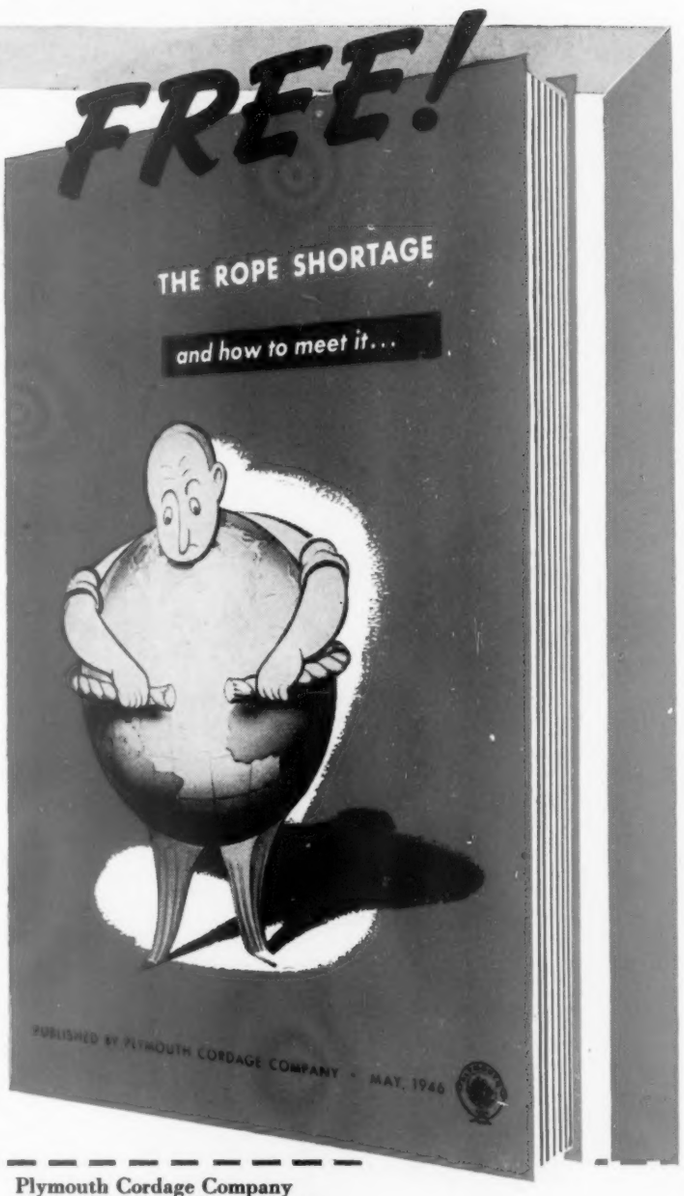
It Tells You—

1 15 ways to make your rope last longer. Your foremen and workers will find it useful in saving Rope—Time—Money!

2 How to examine rope for hidden wear and danger spots—helps you to avoid risk to life and property, and prevent costly shutdowns for breakage repairs!

3 What sizes of rope to use for given loads —what breaking strength of various types and sizes of ropes to bear in mind.

4 What the rope fiber supply outlook is, based on up-to-the-minute estimates of world fiber sources.



Mail this coupon today to get Plymouth's new book. Of value to you in the present rope emergency, it will also help you to save money on rope long after rope is once more available in quantity, by enabling your workers to make safer, longer, more efficient use of rope on the job.

FOR YOUR JOB

Plymouth Cordage Company
North Plymouth, Massachusetts

Dear Sirs:
Kindly send me at once, without cost, your new book, "The Rope Shortage and How to Meet It."

Our rope supplier's name.....

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Company.....

Street Address.....

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P

Faster than Fire

RANDOLPH TRIGGER-TOUCH EXTINGUISHERS!

In fighting fires, it's ACTION that counts! With Randolph "4" it's action you get . . . *easy, quick* and *effective.*

Just one hand snaps this extinguisher from its bracket . . . one trigger-touch sends clouds of penetrating carbon dioxide into the blaze—smothers the fire in *split-seconds!* With no valves or nozzles to adjust, Randolph extinguishers eliminate panic—get the employee to the blaze *before* it spreads!

Randolph "15"

A dry, non-toxic gas, carbon dioxide does not damage equipment or conduct electricity. It leaves no stain or liquid to clean up. And here's a fire-fighting agent that can't freeze or deteriorate . . . ends constant refilling and repairs.

Check up on your flammable liquid and electrical hazards . . . mobilize against fire with Randolph "4", "10", "15" and "25" fast-action extinguishers. To get the complete fire protection facts, simply tear out the coupon below, or write us—today!

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Randolph Laboratories, *INC.*

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Please send me your FREE fire protection handbook "How To Fight Fires With Carbon Dioxide" Also rush details on new carbon dioxide fire extinguishers.

NAME _____

COMPANY _____

ADDRESS _____

(*Continued from page* 202)

meets performance standards of the American Society for Testing Materials, and the Technical Association of the Pulp and Paper Industry has been developed by the Acme Steel Company, 2840 Archer Avenue, Chicago, Ill.

This device has been created in the interest of improved shipping safety, and has demonstrated that it is a very practical container testing unit for regular drop tests, edge tests or corner tests. The Acme company is equipping each of its branch offices for the benefit of shippers who may wish to make tests of their containers. And as a further contribution to better product protection, in the event a shipper wishes to build a drop testing machine in his own plant, the Acme company will furnish him with a detailed blueprint of the device, without cost. The company will also sell the testers through its Chicago office.

* * *

TEN-TON INDUSTRIAL TRUCK WAR-TIME DEVELOPMENT

Capacities of power industrial trucks in general use have increased substantially after each global war due mainly to intensified experience with them. They

Low-swung body structure affords complete visibility

were in early development at the outset of the first conflict; the best then could lift and carry 2 net tons. As that war progressed 3-ton trucks were built; after it was over many more trucks were required, with capacity for transporting loads weighing 5 tons.

Economies apparent in handling larger tonnages at one time, the "secret" of fast, economical movement of materials, led to progressive increase in power. Now after World War II, trucks of 10 tons capacity are available for general use.

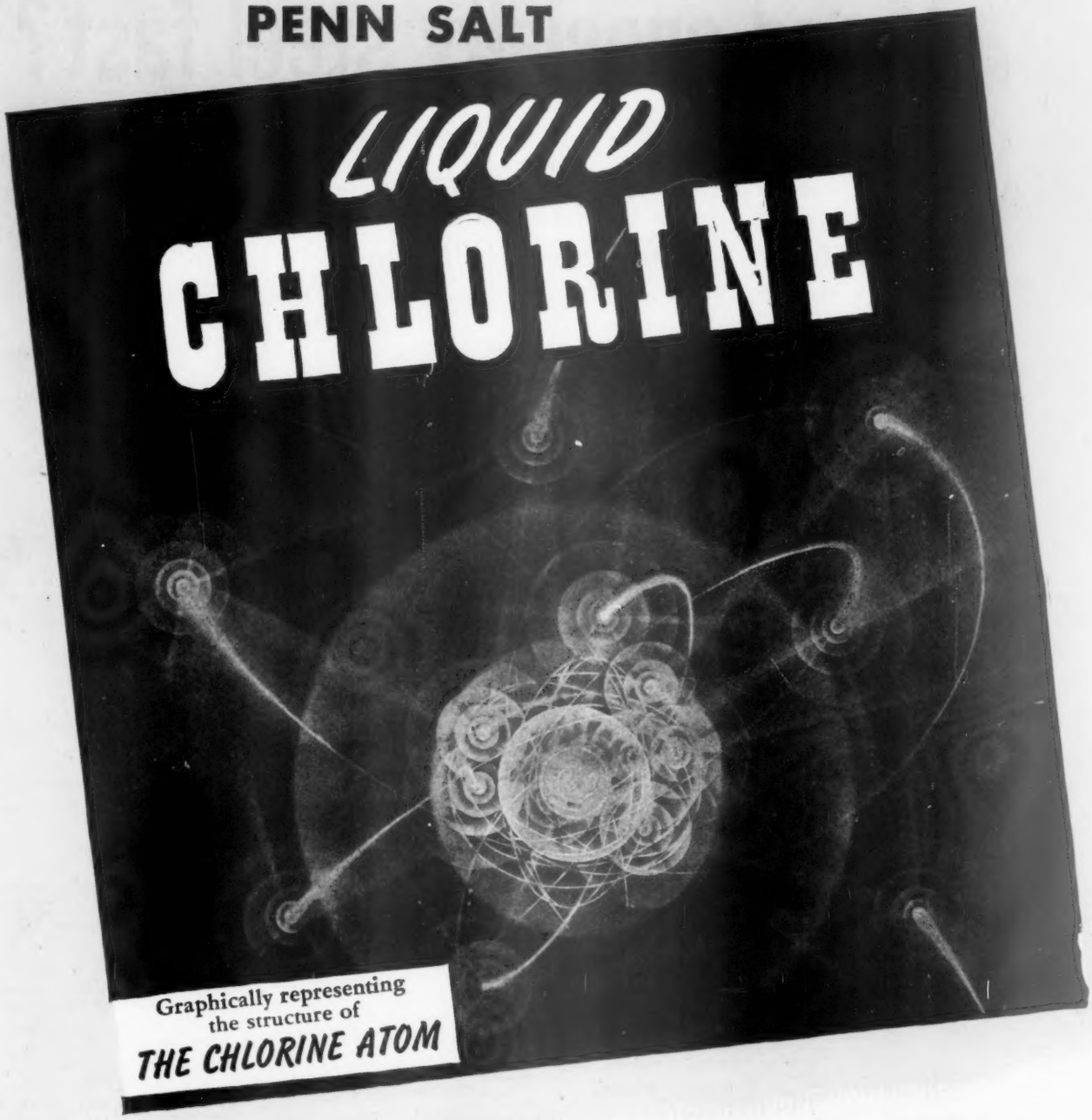
The illustration shows one of a number of these 10-ton units built by the Elwell-Parker Electric Co., Cleveland, for government work, including the Manhattan project. The new trucks are driven by means of storage batteries and electric motors. Their most notable features aside from compactness and power, are simplicity, instant responsiveness, ease in maneuvering; smooth, quiet operation, safety and economy.

The body of the truck is low and the operator has complete visibility of platform, load and surroundings. Overall length is 147 inches, width 45 inches. It is steered by means of all six of its wheels. Four of these wheels, under the platform, insures stability of the load. It can turn in aisles 71 inches wide. Speed may be accelerated rapidly to 6

(*Continued on page* 210)

PENN SALT

LIQUID CHLORINE



Graphically representing the structure of
THE CHLORINE ATOM

OTHER PENN SALT PRODUCTS INCLUDE

Caustic Soda
Sulphate of Alumina
Per*chlor*on
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Causplit Cement

PENN SALT LIQUID CHLORINE is invaluable to the pulp industry as a bleaching agent . . . either for single-stage treatment or for complex seven- or eight-stage operations . . . whether for continuous or batch system. Write for full information.

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Tool Sales Company
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Grand Rapids Supply Company
Jackson
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Kalamazoo
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Bond Supply Company
Kalamazoo Mill Supply Company
Lansing
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MINNESOTA
Cold Spring
Cold Spring Equipment Company
Duluth
Kelley-How-Thomson Company
Marshall-Wells Company
Zalk-Josephs Company
Minneapolis
Minneapolis Iron Store
Williams Hardware Company
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Granite City Tool Company
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Cincinnati
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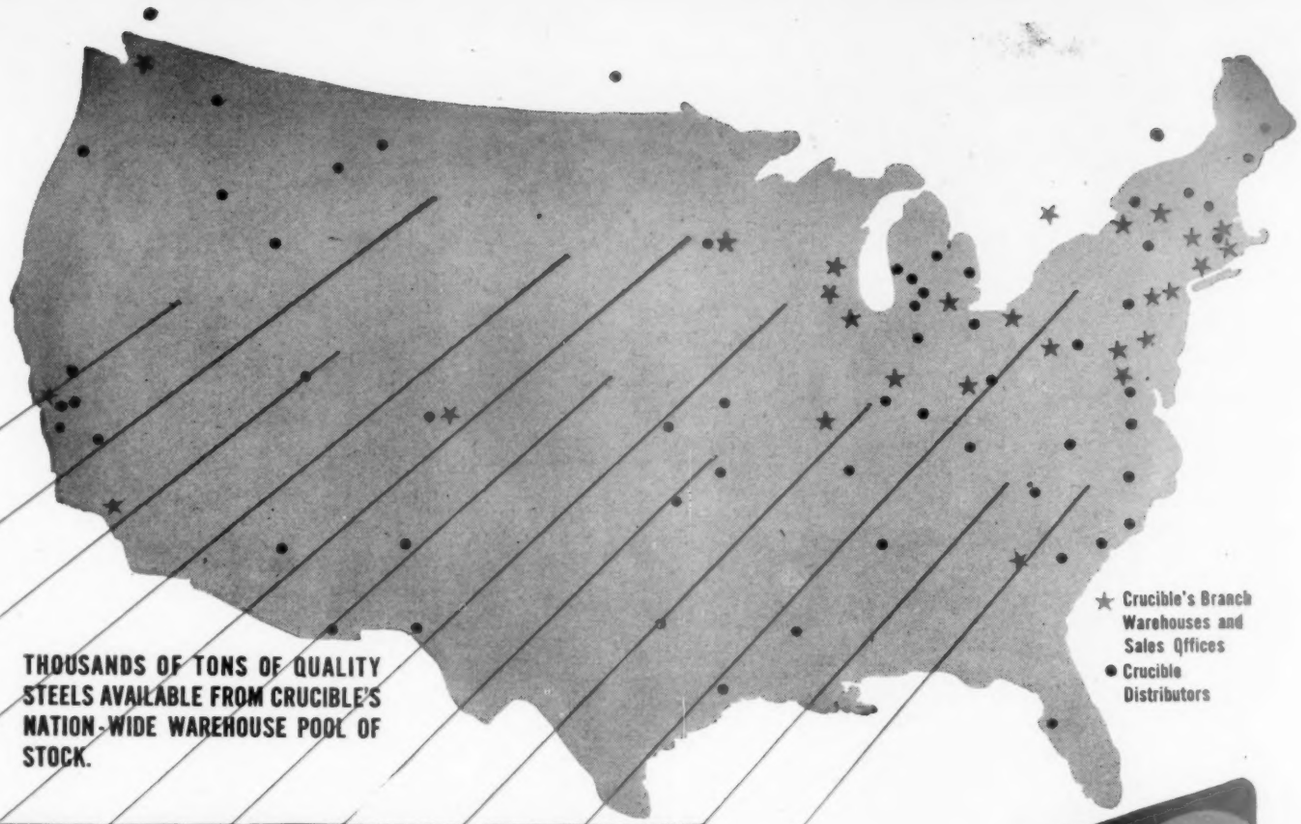

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Shelton
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Hunt and Mottet Company
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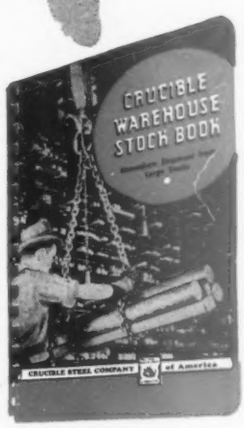

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Millions of whirling abrasive wheels, trained in war's tough school of precision finishing, each doing a prime job in laboratory, tool room, aboard ship, on production line. And — they're all set and eager to tackle civilian goods now that peace machinery is singing again.

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(*Continued from page 206*)

miles an hour, while the truck can come to a "dead" stop within a few feet. Electric drive and controls provide an unusual degree of flexibility.

NEW PLASTIC UNAFFECTED BY AQUA REGIA

The new Du Pont plastic, "Teflon" tetrafluoroethylene resin, is unharmed in some cases by heats ranging up to 575°F. and is unaffected even by aqua regia, which dissolves gold and platinum. Current uses of the unique industrial plastic include gaskets and wire insulation for "jet" engines, and spacers in coaxial cables conducting extreme high-frequency currents for radio, radar, and television.

Other promising developments which have emerged recently from the company's laboratories are DuPont CCA — cellular cellulose acetate — which will be used as a lightweight core or filler material for luggage and various aircraft installations; luminescent compositions of "Lucite" acrylic resin and the same plastic with various frosted and pebbled effects reproduced as a surface finish; nylon sheeting in embossed effects which is expected to be exceptionally durable in many leather-like applications; and DuPont BCM — a low-pressure laminating resin — which has excellent bonding properties and high resistance to heat.

All of these new plastics are in the early stages of commercial development. General availability depends on solving remaining production problems and constructing additional manufacturing facilities.

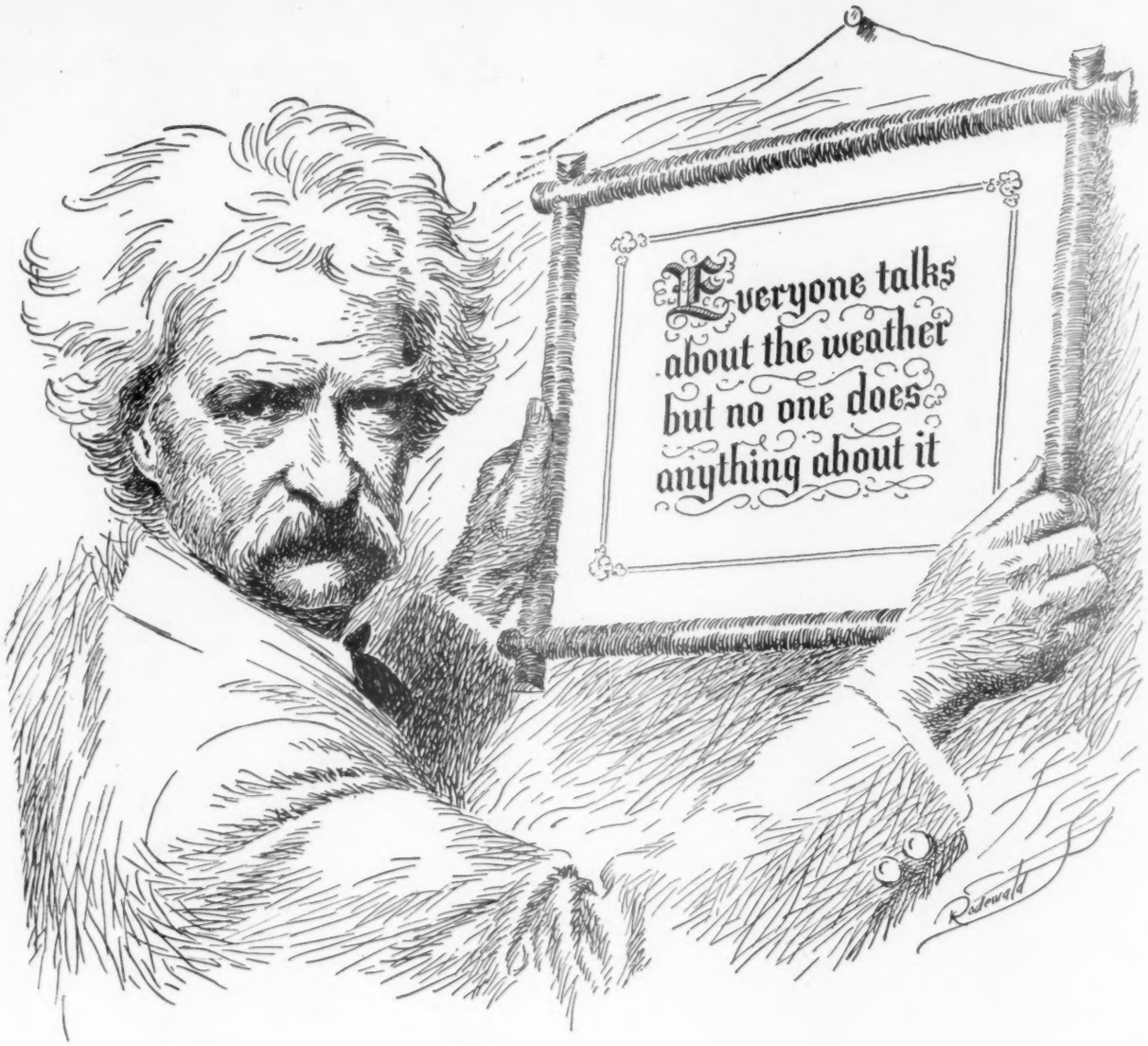
COLOR SOUND MOVIES ON INDUCTION HEATING

A swarthy blacksmith of the old school blinks his eyes in amazement as a trim young lady demonstrates the versatile accomplishments of the modern induction heater in "Metal Magic," a full-color sound movie just produced by the Allis-Chalmers Mfg. Co., Milwaukee, Wis., and available for showing before interested groups.

As evidenced by this film, induction heating, properly applied, offers industry a remarkable tool for surface hardening, annealing, brazing, soldering, melting and heating for forging because it produces high-intensity, controlled heat without inflammable gases.

Speed of operation and ease of control of the unit shown in the movie is emphasized by its being demonstrated by an unskilled girl, who is as photogenic as the neat and compact induction heater itself.

Running time of "Metal Magic," which carries no advertising, is 12 minutes. For use with 16 mm sound projectors only, prints of this film can be had by writing the Allis-Chalmers' advertising department.



"JU-U-ST A MINUTE, MR. TWAIN!"

FACTORIES in New England, mills in the deep south, foundries in the east are having their weather tailor-made every day. That statement attributed to Mark Twain is being punched full of holes by G-E Air Conditioning.

Reliable G-E Air Conditioning, backed by the G-E reputation for performance can do a job for you where too much moisture retards drying, where too little moisture impairs quality, where temperature changes impair accurate machining, where perspiration may mean corrosion.

Call on your G-E distributor for information on how G-E Air Conditioning can be installed to meet your plant's specific requirements. He'll be glad to help.

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GENERAL ELECTRIC

Air Conditioning

Among the ASSOCIATIONS

"Ideas to Sell"

Subcontracting Costs A Production Charge — Buyers Must Have Knowledge of Basic Costs Looking to Cost Control

Under the subject of "Ideas to Sell", E. P. Scully, Director of Purchases, Engineering and Research Corporation, Riverdale, Md., in talk at Forum Meeting of the Purchasing Agents Association of New York, stressed that a knowledge of materials and methods is a prerequisite to price control, and also discussed the factor of sub-contract costs which, he stated, should not be charged to purchased material cost.

Mr. Scully prefaced his remarks by quoting from an article in the Spring number of *Harvard Business Review*, that "Some of the most notable and dramatic achievements of industry during the war were related to its procurement activities", which he defined as a simple statement of fact. "But now that our war assignment is over", he queried, "will the accomplishments of purchasing be any less noteworthy in the peace-time economy.

"I quote again from the same article", he said, "namely": 'It is unfortunately true that in far too many instances purchasing agents, purchasing departments and others responsible for some part of a company's procurement, are quite incapable of living up to the responsibilities provided by the opportunities. They are inefficient, unimaginative, and unprogressive. It has been said by some purchasing agents themselves that if all of the men now engaged in procurement were judged not by what they do, but what they should be able to do, at least a third of them would lose their jobs. It has also been said that one reason why no efficient standard for judging procurement performance has been developed is that so many men now engaged in purchasing are afraid to submit themselves to testing by any real standard.'

"We might well heed that warning and the challenge it offers", continued Mr. Scully. "The percentages may or may not be right or fair, and I'm not in a position to evaluate them, but let's assume that one-third of us present are afraid to submit ourselves to test-jobs. What are we going to do about it and where do we start? During the war purchasing gained prestige for its achievements in procurement simply because we all placed the emphasis on deliveries. In that direction surely no one could ever charge us with 'inefficiency,' 'lack of imagination,' or 'lack of aggressiveness.' Today, the emphasis is on Cost — Price — Inflation, and there's plenty need for imagination to cope with that situation.

"The matter of price is elementary in every purchasing department, and I am sure we all believe we are already buying at the best price. But how much imagination or resourcefulness did you or your buyer use to get the price? The more progressive purchasing officer will not be satisfied with merely getting competitive prices. Top management expects us to make a definite contribution to cost-control, and that's the point I'd like to emphasize. We must use more imagination, ingenuity, resourcefulness, and aggressiveness—those same talents that brought the desired results in procurement during the war.

Knowledge of Costs Basic

"Do you have any idea how much it cost to produce the part you're buying, or how it is produced? Unless you do, you won't always know whether or not you're paying a fair price, and neither will you be able to get the cost factors out. Do you know whether or not the material specified is *necessary* for the job, or would something less expensive do as well? When deliveries were all-important, we would get engineering department concurrence on substitutes and grades. That type of inter-departmental co-operation paid off in procurement—it has even greater possibilities for price savings now.

"Purchasing must proceed on the premises that we can do little or nothing to influence economic cycles—such as inflation or depression, and it must be recognized that we cannot be expert in all classes of materials and methods of fabrication. It remains, then, that we must have some *basic approach* or formula for evaluating price, and I believe we have the direct approach in Methods and Cost. One of the largest shoe manufacturers in the country challenges you to tell the difference between the imported custom-built shoe at $40.00 per pair and his production-line version at $6.60. Maybe there is a difference—I don't know—but I do know there is a spread of 80% between the two methods of production, and we must be in a position to help the engineering department

(*Continued on page* 214)

T. D. HUDSON MADE PRESIDENT OF CLEVELAND ASSN.

Thomas Davis Hudson, Assistant District Purchasing Agent, American Steel and Wire Company, Cleveland, Ohio, was elected president of the Purchasing Agents Association of Cleveland, at that body's recent annual election. Other officers elected are: First vice president, Clarence L. Lesmer, Relling Belle-Vernon Co.; second vice president, Frank J. DeCrane, Lamson & Sessions Company;

Thomas D. Hudson, President
Cleveland Association

secretary-treasurer, Al E. Kotulski, Graybar Electric Company; national director, Francis Gibb Allen, Elliott Electric Company. Jesse Stevens was elected permanent recording secretary of the association.

Mr. Hudson, who has long been active in association circles, has been connected with the U. S. Steel Corporation over thirty years, beginning his career as office boy with the Carnegie Illinois Steel Corporation in Pittsburgh, Pa., October 12, 1915. Shortly afterward he was transferred to the Union Railroad Company and later to The Pittsburgh & Conneaut Dock Company and Pennsylvania and Lake Erie Dock Company where, passing through various positions, he became assistant auditor. Later he was transferred to Conneaut where he became purchasing agent, assistant auditor, and director of these two companies.

He has two hobbies aside from association work and promoting the prestige of men in purchasing, namely, football and softball, plus nine-year old Bill Hudson who helps to keep his dad up to par on those sports.

* * *

PRESIDENTS' NIGHT — INSTALL NEW OFFICERS

Industrial, commercial and governmental purchasing agents from various centers of Western Washington gathered

(*Continued on page* 216)

New ways to save with PHILCO BATTERIES

Now you have palletized unit loads, and the new long-life Philco "Thirty" motive power batteries to make modern electric trucks even more useful and economical. The 30% longer life of Philco "Thirty" means substantial savings in battery replacements. Ask for Philco "Thirty" as initial equipment in your new trucks. Specify Philco "Thirty" on battery replacement orders. Write for specification data today. PHILCO CORPORATION, Storage Battery Division, Trenton 7, New Jersey.

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TO THE ANSWER ON POWER TRANSMISSION PROBLEMS

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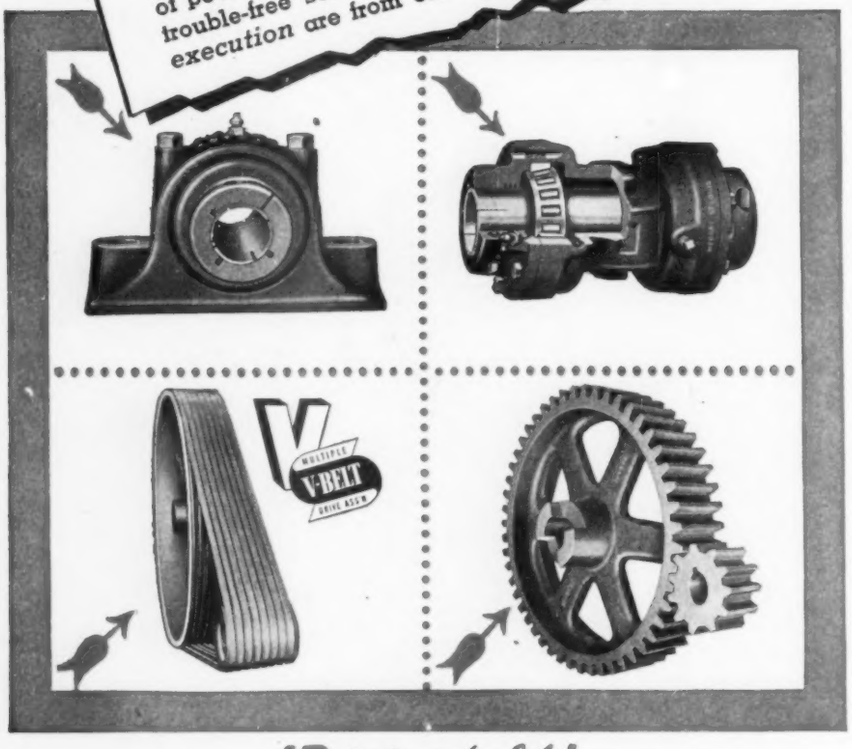

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- Wire Rope Sheaves
- Cut Tooth Gearing
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MANUFACTURING ENGINEERS OF COMPLETE TRANSMISSION EQUIPMENT AND SPECIALIZED MACHINERY

MEDART

THE MEDART COMPANY • 3500 DEKALB ST., ST. LOUIS, MO.

(*Continued from page* 212)

select the cheapest method. If management insists on the custom-built job they must expect to pay for it, but at least the purchasing agent will know why his materials cost so much, and where he could save.

"If someone in your company requisitioned a Persian rug and ebony desk, you'd surely ask him to consider a broadloom carpet and a walnut desk. Follow the same procedure on production materials and you'll get Better Prices from Lower Costs.

Materials plus Methods = Cost
Cost plus Overhead = Price

"Obviously, then, our price problem begins with the selection of material and methods, and that's where we must concentrate our imagination, ingenuity, resourcefulness and aggressiveness.

Sub-Contract Costs

"There is another element of cost in purchasing that warrants major consideration, and I refer to the type of purchase or procurement we called 'sub-contract' during the war. Originally we 'sub-contracted' work because our own facilities or capacity wasn't equal to the demand. However much we used or abused 'subcontracting' it was, and is, essentially purchased labor—not materials. Today industry is faced with heavy demands for peace-time requirements and many of us are subcontracting a lot of work, or parts, in order to obtain maximum output of the finished product. Should that cost be charged to purchasing or production? The answer would seem to be obvious, and yet I know many purchasing departments who are shouldering this added item of 'purchased labor' in their purchased material costs. Aside from any selfish interest in purchasing, I don't believe this manner of cost-accounting is fair to management, purchasing, or the ultimate consumer. One obvious reason is because management must know where the costs are before they can reduce or eliminate them.

A Production Charge

"When the project or unit was decided upon, management estimated a certain figure for material and for labor. Somewhere along the line in manufacture the shop runs out of capacity—either men or machines—and part of the work that could or should have been done in the shop is 'sub-contracted.' Shop costs go down by that much, and purchased materials cost goes up; that is, unless you're watching the cost of distribution. Unless management has the true proportion of material and labor costs they are handicapped in pricing the end-product, for the simple reason that an 18% increase in labor-cost is apt to be deceiving unless you also include purchased labor. Likewise, the anticipated 10% increase in material cost is sure to be wrong if you're not segregating purchased labor, which will be up more nearly 18%. I believe that 'sub-contracting'—whether for

(*Continued on page* 216)

It's DOUBLE EXTRUSION accuracy and forging action

(the Kaufman Process) that gives you extra strength and close fit in

CLEVELAND *Top Quality* FASTENERS

All sizes of cap screws — even including one inch diameter — are produced in our plant by the extra-strength-and-toughness-making Kaufman Process. This includes both high carbon and alloy heat treated products. You profit by the double extrusion accuracy and extra strength in over 90% of Cleveland-made standard fasteners, and in your own design special headed and threaded parts. Complete equipment for modern heat treatment assures you the utmost in correct hardening and tempering. Write for Catalog F.

CLEVELAND *Top Quality* FASTENERS

The Cleveland Cap Screw Company

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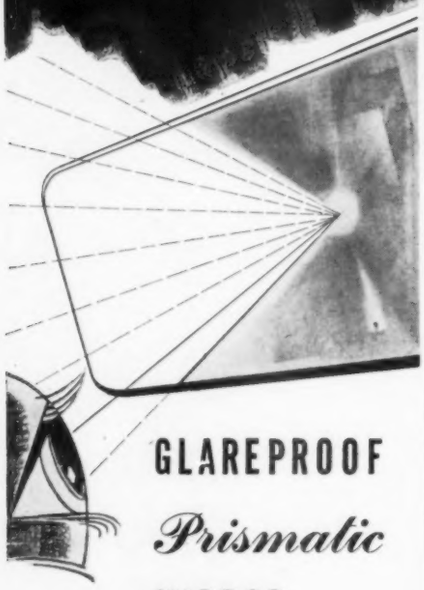
Warehouses: Chicago, Philadelphia and New York

Ask your Jobber for Cleveland Fasteners

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

Another Use for Donnelly-Kelley Precision Glass Parts



GLAREPROOF *Prismatic* MIRROR

● This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.

DONNELLY-KELLEY *Glass Products*

Donnelly-Kelley Glass Co.
Holland, Mich.

(Continued from page 214)

convenience or economy — should be charged to production and not to purchasing, and I don't think there should be much trouble selling the idea to management or to your cost accountant.

"The cost of purchased materials is usually a high percentage of the end-product cost, and prices are still going up. Every officer and supervisor in your company will study the labor problem and labor-cost in your own shop, but the P.A. alone must control the materials cost. More than ever before, you will have to be cost-conscious if you expect to maintain the same relative position for material costs vs shop cost.

"I hope I won't be considered presumptious if I try to sell you the idea that a knowledge of Materials *and* Methods is a prerequisite to an understanding and control of Price. I hope, too, that you can sell your cost department the idea that 'sub-contracted' work or parts should not be charged to purchased materials cost."

SEATTLE MEETING

(Continued from page 212)

at the Washington Athletic Club, Seattle, Wash., Thursday, May 9th for the monthly dinner meeting of the Purchasing Agents Association of Washington. It was Past Presidents' Night with the first prexy, George A. Hawley of Seattle Screw Products Co., presiding. He served as president in 1920.

Featured on the evening's program, arranged jointly by Vice President R. Guy Frederick and Past President Charles V. Tinker, were:

1. Technicolor Sound Movies on "Pan American Highway Construction," shown through courtesy of Allis-Chalmers Co., A. E. Saudelin local representative.

2. Short talks by past presidents H. J. Dobb, vice president & general manager Schwabacher Bros. & Co., Inc. on "Critical Food Situation"; John Locke, vice president and general manager, Fisher Flouring Mills Co. on "Flour Situation" and Carl R. English, vice president and general manager, Pacific Coast Co. on "Coal Situation."

3. Installation of following new officers:

President—R. Guy Fredericks, I. F. Laucks, Inc.

1st Vice President—Stanley E. Ringheim, Crown-Zellerbach Corp.

2nd Vice President—Kenneth A. Knudson, Everett Pulp & Paper Co., Everett.

Secretary—Russell Wetherell, Olympic Foundry Co.

Treasurer—Frank C. Bergmann, Pacific Coast Co.

National Director—H. F. Price, Bethlehem Pacific Coast Steel Corp.

Trustees—D. P. Brewer, Trumbull Electric Mfg. Co.; John S. Robinson, Todd Shipyards Corp., Seattle Div.; Rex C. Brainard, Newspaper Supply, Spokane; C. R. Ragsdale, Seattle Tent & Awning Co., and W. E. Lindersmith, Young Iron Works.

An educational forum was held at 4:30 P. M. preceding the dinner, with the topic being: "When and How Should We Buy Used Equipment." Cases under consideration were briefed by Ed A. Westfall of Stetson-Ross Machine Co. with responses by D. J. Langlois, Northwest Steel Rolling Mills and Walker K. Phelan, Craftsman Press.

Professor Don Mackenzie of the School of Business Administration, University of Washington, served as Moderator and Russell Wetherell, chairman of the Associations' Educational Committee presided.

CAROLINAS-VIRGINIA ASSOCIATION HOLDS SPRING MEETING

The Carolinas - Virginia Purchasing Agents Association held a two-day meeting at Highland Pines Inn, Southern Pines, N. C., on April 26th and 27th, with 110 delegates being registered, the meeting being a joint one with the Eighth District Council of the N.A.P.A.

J. M. Potter of Raleigh, association president, and purchasing agent for the State Highway and Public Works Commission, presided at the opening session. This was followed by a closed forum with R. C. Haberkern, R. J. Reynolds Tobacco Co., Winston - Salem, N. C., presiding. Industry group forums were conducted as follows: Coal-fuel, Malcolm McDonald; Government, W. Z. Betts; Paper and Containers, C. L. Wyrick; Textiles, David Lindsay; Utilities, H. E. Wilson.

At the annual banquet the evening of the 26th, following a social hour, Dr. John Cunningham, president of Davidson College, was the featured speaker.

National Director D. S. Burnside of Spartanburg, S. C., presided at joint opening meeting the morning of the 27th. Among the speakers were J. W. Knowlton of Duke Power Co., Charlotte, who spoke on "There Ain't No Such Thing as a Free Lunch"; A. W. Zackey, Philadelphia, Eighth District vice president, N.A.P.A., whose subject was "The Objects and Organization of N.A.P.A."; J. H. Gaston, Baltimore, who spoke on "Services and Publications of the N.A.P.A."; and H. I. Patten of the *Philadelphia Purchasor*. The business session was followed by golf and recreation Saturday afternoon.

SURPLUS MATERIALS MEMPHIS

Surplus government materials was the topic of the April dinner-meeting of the Memphis Association of Purchasing Agents, at Hotel Gayoso, where Lt. H. R. Miller, Salvage officer, 830th Air Forces Specialized Depot, spoke on "Air Forces Surplus Materials," and Capt. C. M. Odenwalder, salvage officer, Army Service Forces Depot discussed "Ground Forces Surplus Materials." A round-table discussion on escalator clauses, quotations and acknowledgments, credit terms and conditions on purchase orders and contracts followed, headed by Martin Sunderland.

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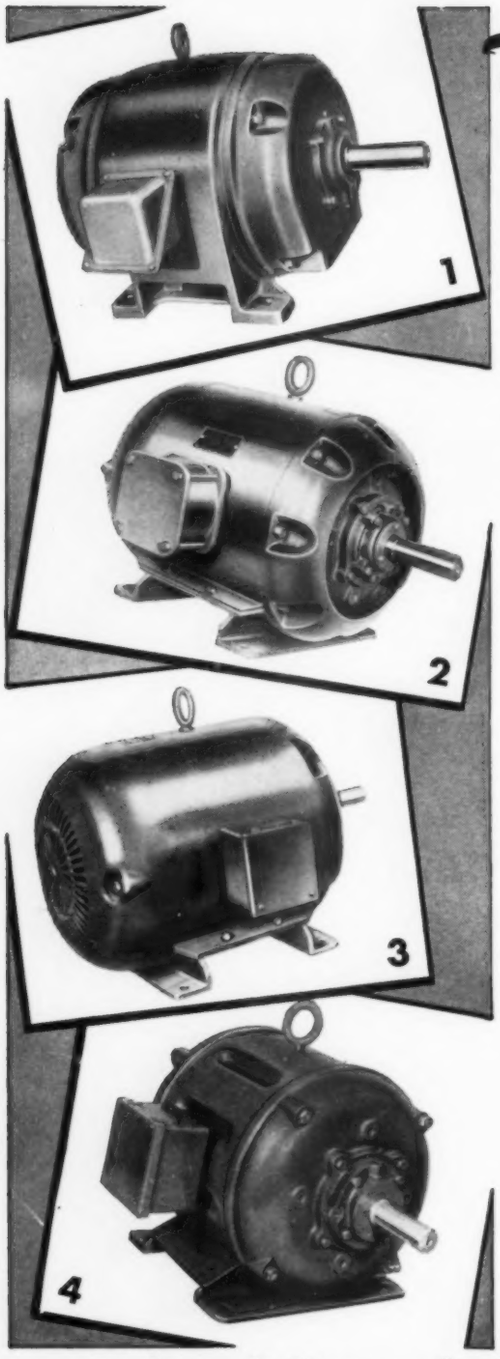

These Wagner Motors HAVE BUILT-IN PROTECTION

Wagner motors that have built-in protection by virtue of their design and construction give dependable service year after year under operating conditions which would necessitate frequent shutdowns and replacements if ordinary motors were being used.

It pays to use Wagner protected motors in locations where dust, dirt, moisture, metal filings, chips, splashing or dripping liquids, acid fumes, explosive gases, or other such conditions would cut short the life of ordinary motors.

There is a Wagner protected motor specifically designed to meet the special conditions found in machine shops, chemical plants, refineries, and other manufacturing and processing plants. Four types of Wagner protected motors are shown at the left and described below.

1 WAGNER SPLASH-PROOF MOTORS are built to operate dependably in locations where they are subject to splashing water, oil, or other liquids. They are widely used in exposed outdoor locations, and are completely self-protected against ice, sleet, snow, and rain.

2 WAGNER EXPLOSION-PROOF MOTORS have been approved by the Underwriters Laboratories for Class 1 Group D hazardous locations, "where gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors, or natural gas are manufactured, used, or handled."

3 WAGNER TOTALLY-ENCLOSED FAN-COOLED MOTORS are designed to operate under severe and adverse conditions in locations where dust, dirt, abrasives, steel chips, filings, acid fumes, and other harmful elements may damage the windings and bearings.

4 WAGNER TOTALLY-ENCLOSED NON-VENTILATED MOTORS may be installed in the locations listed under item 3, and are built instead of totally-enclosed fan-cooled motors in the smaller ratings where special provision for cooling is unnecessary. In the larger ratings they are used where the draft produced by the fan-cooled motor is objectionable.

Write for Bulletin MU-185 addressing your request to Wagner Electric Corporation, 6360 Plymouth Avenue, St. Louis 14, Missouri, U. S. A.

M46-13

Consult Wagner Engineers on all Electric Motor Problems

Electric Motors • Air Brakes • Brake Lining Hydraulic Brakes

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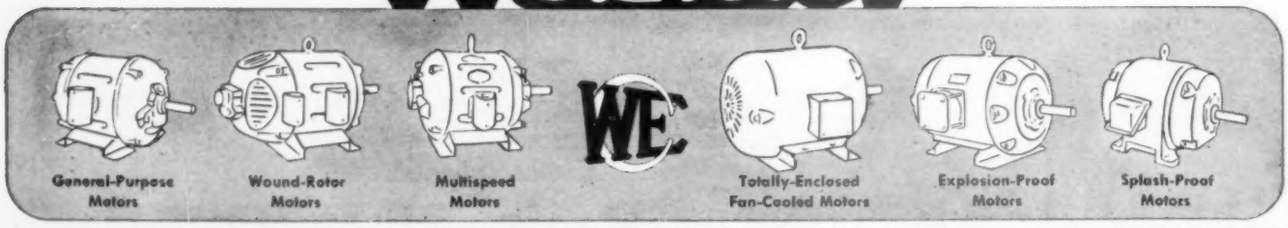

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CARBOLOY (TRADEMARK) CEMENTED CARBIDE "STANDARDS"

Speed Production, Cut Costs

ON JOB LOT WORK TOO!

Here's how Oakland Machine Works*—an aggressive small shop doing diversified job-lot work, keeps tool costs low, makes fast changeovers, and meets close schedules:

1. They plan tooling to widely use low-cost, readily available "Standard" Carboloy Tools—adaptable to 60-80% of most jobs.
2. For "special" tooling—not adaptable from "standards"—they design and tip them with inexpensive "Standard" Carboloy *Blanks* from stock.

Whether your machining applications involve quantity production or job-lots, your plant, too can benefit by this low tool cost, wide adaptability, and ready availability made possible by Standard Carboloy Tools and Blanks. *Write for Catalog GT-175-R.*

1. EXTRA DIVIDENDS FROM "STANDARDS"

On **this** job-lot application—machining cast iron pulleys—"Standards" not only held down **initial** tool costs but also stepped up production; kept machines running 4 times longer per tool grind. For maximum savings, Standard Carboloy Tools were adapted to 8 roughing and finishing operations; while all "specials," except drill, were tipped with "Standard" Carboloy Blanks.

2. QUICK CHANGES AT MINIMUM COST

On job-lot work, set-ups change frequently! "Today" the job is a carbide-tipped 11-tool set-up for cast iron water pump housing parts. "Tomorrow" it may be an entirely different 27-tool set-up for one-piece aluminum fans and pulleys. By carefully planned use of adaptable "Standard" Carboloy Tools, Oakland keeps tool cost down despite frequent changes.

3. MACHINING CAST IRON HOUSINGS AT 340 F.P.M.

When carbide tools went on this job—machining cast iron water pump housings—speeds jumped to 340 F.P.M.; tool life stepped up 600%. For extra economy, the 7 tools used were made with "Standard" Carboloy Blanks, available from stock at low cost.

Oakland Machine Works regularly uses 3 of these Standard Carboloy Tool styles.

*Royal Oak, Michigan

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GUY WILLIAMS HEADS DALLAS ASSOCIATION

Guy Williams, purchasing agent, Seaboard Oil Co., Dallas, Tex., has been elected president of the Purchasing Agents Association of Dallas, for the 1946-47 term. Other officers are: Charles L. Wilson, Lone Star Gas Co., first vice president; Linn Crockett, American Liberty Oil Co., second vice president; Louis P. McElroy, Dallas Power & Light Co., secretary; L. B. Mitchell, McKesson-Crowdus Drug Co., treasurer.

DUAL PLANT VISITS METROPOLITAN CLUB

Metropolitan Purchasers Assistants Club, New York, inaugurated its post-war plant visitation program on April 12th with a double feature. First tour, through the Culbert Pipe & Fittings Co., was lead by J. L. Comer, vice president of the company. Second feature was a tour through the Watson-Stillman Co., Roselle, N.J., conducted by the company's vice president, A. G. York. Following the plant visitations, members were supper-guests of Mr. York at the Elks Club, Elizabeth, N. J. About 20 members attended.

At their April 9th meeting in the Midston House; New York City, members of the M.P.A.C. heard K. W. Snetsinger, assistant regional sales manager of Weatherhead Co., Inc., Cleveland, speak on "Looking Ahead with Weatherhead." His talk was followed by the movie "Pictorial Tour Through Defeated Germany," which was filmed by A. J. Weatherhead president of the Weatherhead Co. A forum discussion on "Interesting Purchasing Experiences" was led by Al Northacker, educational chairman.

Clarence H. Berry, Prudential Insurance Co., retires as executive board chairman of M.P.A.C. this month. Thomas H. Masters, president of the club, succeeds him

SYL W. AMAN HEADS ROCHESTER ASSOCIATION

Syl W. Aman, Rochester Products Division, General Motors Corp., Rochester, N. Y., was elected president of the Purchasing Agents Association of Rochester, for the 1946-47 association year, at the recent annual election. Other officers are: First vice president, Raymond Sauer, Will Corporation; second vice president, Joseph Ehrstein, International Business Machines Corp.; third vice president, Clarence S. Buss, Bausch & Lomb Optical Company; secretary-treasurer, W. B. Wight, Bausch & Lomb Optical Company. Directors: John T. Harbison, Hawkeye Works, Eastman Kodak Co.; Percy Coomber, Distillation Products; Floyd W. Curtis, Haloid Company; William T. Kelly, Rochester Telephone Corp.; Irv Devendorf, Hickok Manufacturing Company.

DISCUSS MAGNESIUM AT LOUISVILLE MEETING

Magnesium featured the April meeting of the Purchasing Agents Association of Louisville at the Kentucky Hotel on Tuesday, April 16. Dan W. Moll, vice president and treasurer of the Hills-McCanna Company, Chicago, spoke on "The Past, Present and Future of Magnesium." Following this talk, a motion

(*Continued on page 222*)

Metropolitan Purchasers' Assistants Club on a plant tour. First row, left to right: J. Corcoran, Pioneer Aviation Div. of Bendix Corp.; A. A. Northacker, M. W. Kellogg Co.; J. L. Comer, vice president, Culbert Pipe & Fittings Co.; A. G. York, vice president, Watson-Stillman Co.; J. Siddons, M. W. Kellogg Co.; J. Merrill, Phelps Dodge Copper Products Corp.; J. Sharkey, Culbert Pipe & Fittings Co. Second row: A. F. Mosch, M. W. Kellogg Co.; R. Schmidbauer, Prudential Insurance Co.; L. W. Skillman, Consolidated R. R.'s of Cuba; J. M. Nobis, Culbert Pipe & Fittings Co.; J. J. Mastalski, Phelps Dodge Copper Products Corp.; C. C. Cone, Culbert Pipe & Fittings Co.; J. P. Bittenbinder and Shelby L. Jones, Watson-Stillman Co.; H. A. Peck, Purolator Products Co.; R. J. Ferguson, Marine Transportation Lines, Inc.

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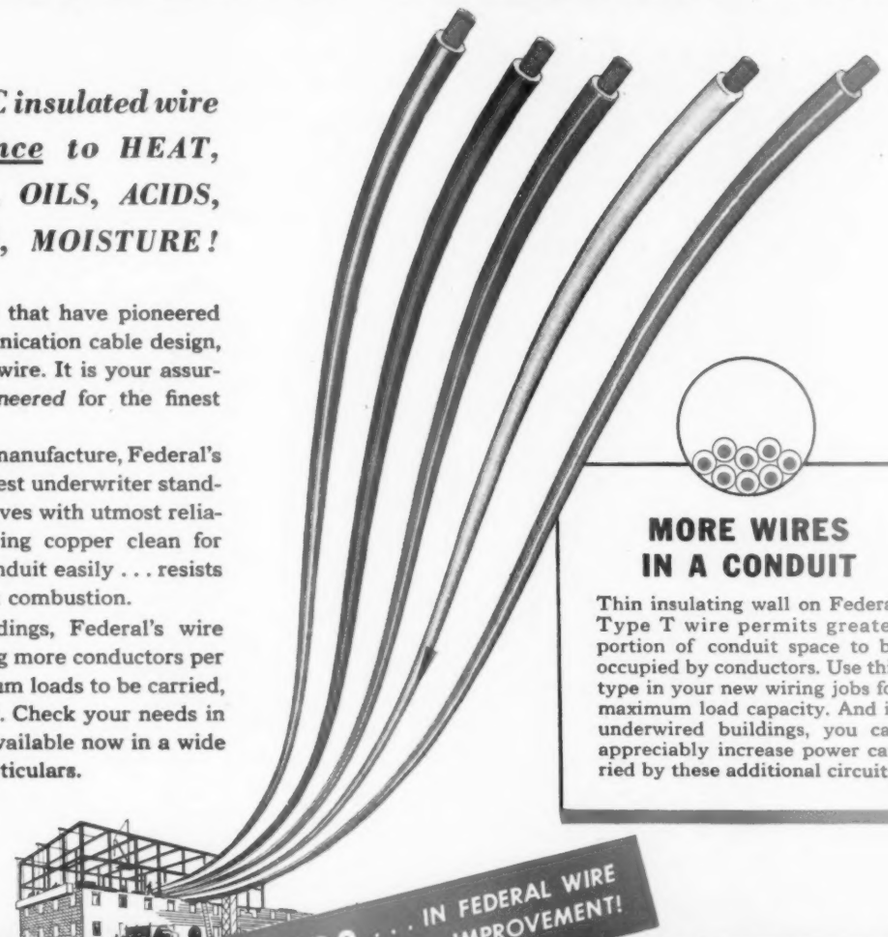
From the same laboratories that have pioneered so many advances in communication cable design, comes this Federal Type T wire. It is your assurance of building wire *engineered* for the finest possible job.

Rigidly controlled during manufacture, Federal's Type T is also tested to highest underwriter standards. In general wiring, it serves with utmost reliability. It strips freely, leaving copper clean for splicing . . . pulls through conduit easily . . . resists abrasion . . . doesn't support combustion.

And in underwired buildings, Federal's wire works wonders . . . permitting more conductors per unit area of conduit, maximum loads to be carried, more circuits to be installed. Check your needs in Type T building wire. It's available now in a wide range of sizes. Write for particulars.



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Thin insulating wall on Federal Type T wire permits greater portion of conduit space to be occupied by conductors. Use this type in your new wiring jobs for maximum load capacity. And in underwired buildings, you can appreciably increase power carried by these additional circuits!

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CAN YOU GUESS THE ANSWERS?

1. What cooks faster than a gas stove?

Brakes, stopping a 7-ton truck within legal limits, generate as much heat in 3.7 *seconds* as a gas burner generates in 9.5 *minutes*. TRU-STOP Emergency Brakes throw off that intense heat immediately, thus preventing brake linings from "cooking." TRU-STOPS are a product of Acco's Automotive and Aircraft Division.

2. How many wrecks are towed in every year?

More than 2,000,000 auto wrecks are towed in to garages every year. Acco's Manley Division has produced a new Wrecking Crane which picks up and tows in these wrecks most efficiently. The Manley Division also makes a whole line of equipment which facilitates the service and repair of automobiles and trucks.

3. How many dairy cows in the United States?

The answer is more than 26,000,000. During a single year Acco's American Chain Division makes millions of feet of one type of chain which goes into cow-ties for the farms of America. This is but one of the multitude of uses for American Chain.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain · Wire Rope · Aircraft Cable · Fence · Welding Wire · Cutting Machines · Castings · Wire · Springs · Lawn Mowers · Bolts & Nuts · Hardness Testers · Hoists & Cranes · Valves · Pressure Gages · Automotive Service Equipment

ACCO

AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

(*Continued from page 220*)

picture entitled "Magnesium, the Miracle Metal" was shown. Questions on the use of magnesium were answered by Mr. Moll, C. G. Plovanich of Rome, New York, technical advisor of the Revere Copper & Brass Co., and H. E. Ellis of St. Louis of the Dow Chemical Company.

Professor C. W. Williams, head of the Economics Department of the University of Louisville, gave his regular summary of the economic condition. Contract for the publication of an association magazine to be known as the "Kentuckiana Purchaser" was approved by the membership. This publication is to be published monthly commencing with the first issue in May.

JESSE R. STEVENS IS MADE BUSINESS MANAGER OF CLEVELAND ASSOCIATION

Jesse R. Stevens, Purchasing Agent, Harshaw Chemical Company, Cleveland, Ohio, has resigned that connection to become Business Manager of the Purchasing Agents Association of Cleveland. Mr. Stevens, who has been active in purchasing for more than two decades, also thus terminated five years' of service as secretary-treasurer of the Cleveland association.

Business Manager Stevens, Cleveland Assn.

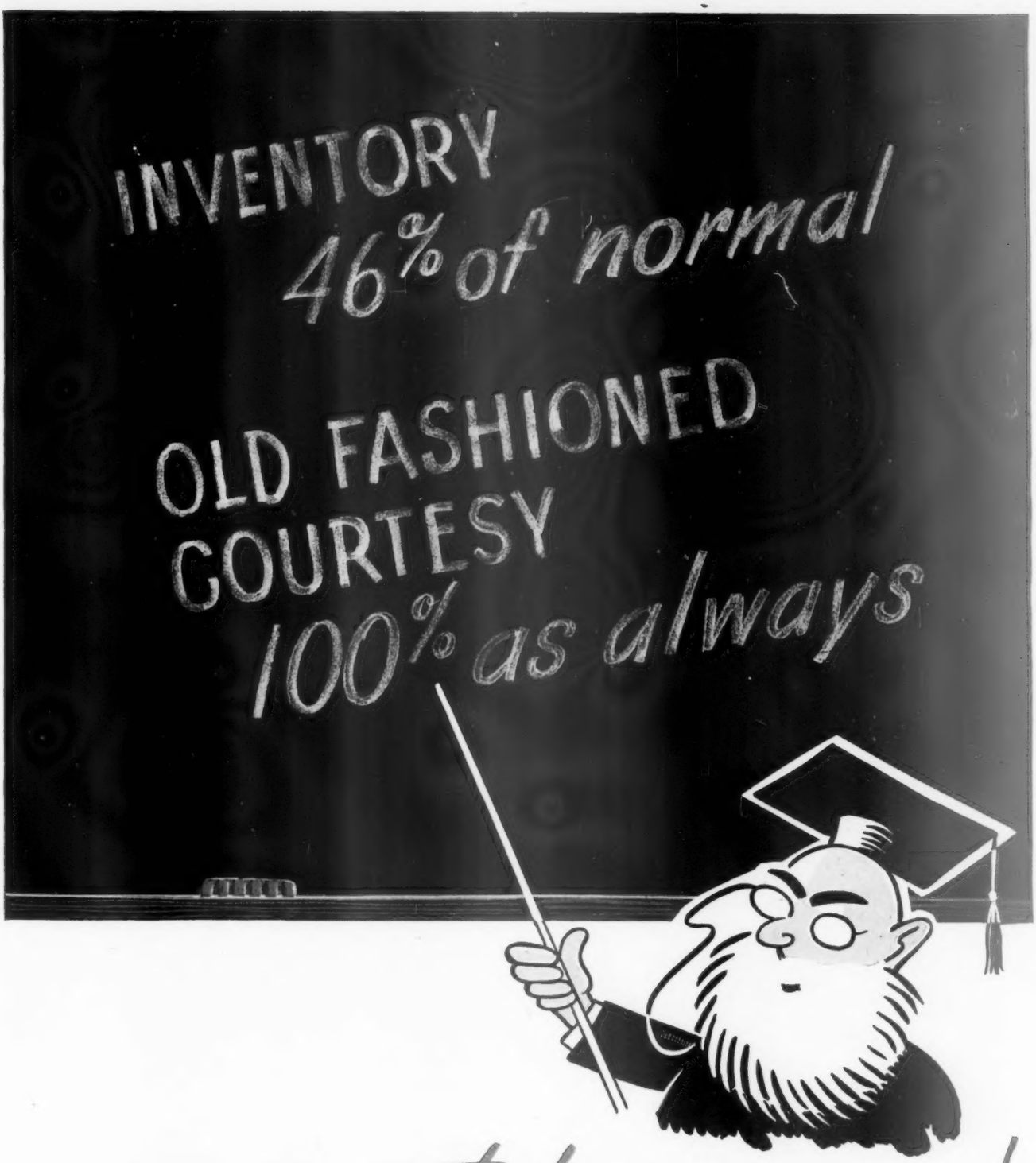
By appointing a business manager, the association will be better equipped to increase its service to its rapidly expanding membership. Negotations for a down-town association are under way, and announcement concerning the opening of the new headquarters is expected in the near future.

DISCUSS PLASTICS AT WASHINGTON MEETING

In the course of a talk on plastic products at the April 9th meeting of the Purchasing Agents Association of Washington, D.C. at the Mayflower Hotel, A. W. Alexander declared that World War II had been a proving ground for plastics, marking the development of a new plastics industry — one which foresook a world of beauty and color for one of sober utility.

He quoted the Encyclopedia of Plastics to the effect that fifty years of progress had been telescoped into the past five years, stating that this is especially true

(*Continued on page 224*)



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LIFT ABOUT-JR.
FEATURES

BRAKE AND MOTOR CONTROL—Buckley (Patented) combined brake and motor control is designed with fewer operating parts—ruggedly constructed to insure long life and positive control—equipped with oversize magnets, silver-tipped contacts, and contactors with mechanical interlock.

PLUGGING LIMIT SWITCH—Should the load block over-drift, to prevent possible damage, the plugging limit switch will automatically establish a momentary lowering circuit with the hoist motor as the load hook reaches its upper limit of travel.

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LIFTABOUT, JR. IS BUILT LIKE A HEAVY-DUTY HOIST TO STAND UP UNDER SEVERE OPERATING CONDITIONS

BY popular demand—Shepard Niles developed a lightweight hoist that has all the features and advantages you have come to expect of load lifting equipment. Every detail of construction has been thoroughly tested, every condition of performance proved. Built to give dependable load handling service, the new LiftAbout, Jr. assures you of long durable service with a minimum investment and maintenance cost.

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Write today for bulletin giving complete particulars about the new lightweight LiftAbout, Jr.

Shepard Niles
CRANE & HOIST CORPORATION
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(*Continued from page 222*)

of the aircraft industry, and that there were nearly twice as many reports published on aircraft applications of plastics as on all its other war uses.

Mr. Alexander stated that in 1945 there were more than 40 main classes of plastic materials as compared with some 20 types in 1939. He said that the uses for plastics are constantly expanding despite the fact that price levels are still relatively high and this is a limiting factor on their wider utilization. However, he said that plastic prices are expected to gradually decline as production increases, especially calling attention to Polystyrene which is now the least expensive of the thermoplastic materials.

"In any discussion of new products", he said, "I believe a discussion of material substitutes is in order, since a buyer who does a good job must be constantly on the lookout for possible price savings. Recently our department was able to get engineering approval on the use of canvas base Bakelite in an application where linen base material was specified, with a resulting saving of about 15 percent on several parts. This, in itself, does not mean much but multiplied by the savings possible in other items, we believe, will make it possible to buy subsequent releases at a lower price than we have been able to get in the past even though we are constantly faced with a rising market".

H. N. McGILL SPEAKS AT BOSTON MEETING

Herbert N. McGill, editor of McGill Commodity Service, Inc., noted economist was guest speaker at the May 14th meeting of the New England Purchasing Agents Association, at Schrafft's in Boston. His subject was "Economic Outlook—Past and Future."

The following new officers were elected at the meeting, for the '46-'47 term: President, Lloyd A. Lowe, C. H. Sprague & Son Co.; Vice president, Kendrick Burns, S. D. Warren Co.; Treasurer, Daniel G. Donovan, Pepperell Manufacturing Co.; Directors for 2 years, Frank P. Craig, Boston Edison Co.; George D. Means, State Steel Trust Company; George F. Williams, Eastern Steamship Lines, Inc. National director, Frank G. Kennedy, Simplex Wire & Cable Company.

The New England Association will hold its Summer Outing, the first since 1942, at United Shoe Machinery Athletic Association Club, North Beverly, Mass., on June 12. It will be an all-day affair.

TORONTO ASSOCIATION SPONSORS ESSAY CONTEST

The Purchasing Agents Association of Toronto is sponsoring an essay contest known as the Arthur Cherry Memorial Essay Contest, on the subject "How Purchasing Can Best Dovetail with Produc-

(*Continued on page 226*)

Solving
TOMORROW'S PROBLEMS

GOULD RESEARCH IS CONSTANT, SO LOOK TO GOULD FOR LEADERSHIP!

In the new Gould research laboratory there is an electric spark that is bringing you better batteries. It is part of a modern spectroscope used to determine the purity of metals.

Samples of lead, burnt in this spark, are spectroscopically photographed and the resulting film inserted in the densitometer shown below. This machine can indentify and accurately measure the presence of less than one thousandth of one per cent of any foreign substance.

These instruments are but two of the many new research tools in use in the Gould laboratory. Under the skilled direction of Gould engineers they are making storage battery construction an exact science.

For further information about this new research laboratory write Dept. 26, Gould Storage Battery Corporation, Depew, New York.

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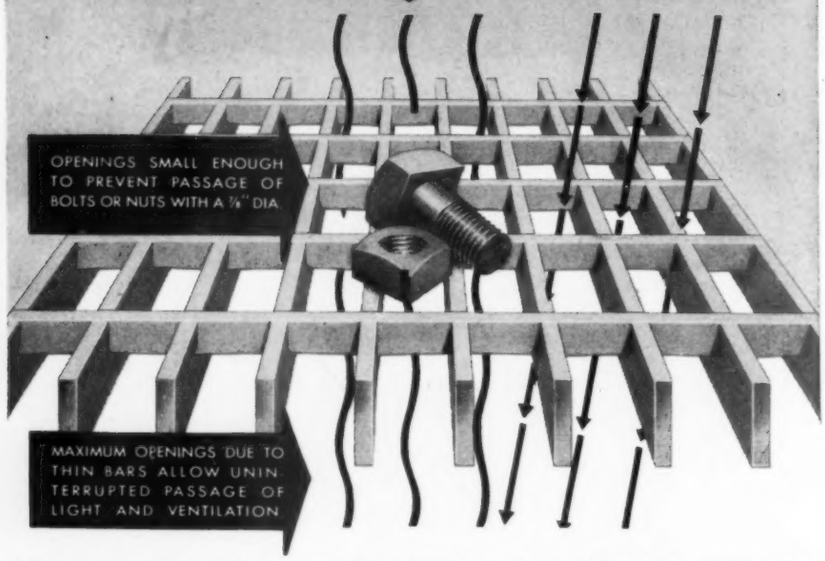
OPENINGS SMALL ENOUGH TO PREVENT PASSAGE OF BOLTS OR NUTS WITH A ⅞" DIA.
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Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE *Specialized* CLEANING
MATERIALS · METHODS · SERVICE · FOR EVERY CLEANING REQUIREMENT

(*Continued from page* 224)

tion, Sales and Management for Efficiency and Goodwill". The contest is open to any purchasing agent in Canada or Newfoundland vouched for by the Purchasing executive in charge of the department. A cash prize of $50 has been offered by Mrs. Arthur Cherry to go to the writer of the essay selected as the best of those submitted. Mrs. Cherry has done this in memory of her late husband, Arthur Cherry, of Canadian General Electric Co. Ltd., for many years a member of the Toronto association. Manuscripts are limited to 4,000 words, and must be in the hands of J. R. Bell, Business Systems Ltd., Toronto 2B, who is acting for Mrs. Cherry, not later than noon of August 31, 1946. It is the plan to make the winning award during the annual Business Conference of Canadian Purchasing Agents Associations which will be held in Hamilton, Ont., in October.

LAWRENCE S. CLARK HEADS TWIN CITY ASSOCIATION

Lawrence S. Clark, purchasing agent and secretary of Twin City Hardwood Lumber Co., St. Paul, Minn., has been elected president of Twin City Association of Purchasing agents for the 1946-47 association year. Other officers elected are, H. E. Hildebrandt, Nuttig Truck and Caster Co., Faribault, Minn., vice president; Basil L. Nelson, Northern States Power Co., St. Paul, secretary-treasurer; Paul E. Cross, The Waterman-Waterbury Co., Minneapolis, National director. Directors: H. C. Powell, Minnesota Mining & Mfg. Co., St. Paul; R. A. Nentwig, Superior Metal Products Co., St. Paul; N. A. Westhoff, The B. F. Nelson Mfg. Co., Minneapolis; G. R. Arneson, City of Minneapolis.

U. N. AND WORLD PEACE VANCOUVER

By R. A. Baker

The greatest mistake that could be made, and one that would sound the death knell of the United Nations, would be for that body to adopt a policy of appeasement, declared A. R. MacDougall, Rhodes Scholar, now practicing law in Vancouver, who was guest speaker at the April meeting of the Purchasing Agents Association of British Columbia, Vancouver, B. C. "If individuals all over the world in sufficient numbers would insist that the great new International Charter be nutured and brought to maturity so that all nations will forfeit sufficient of their sovereignty to accept settlement of international disputes without "resort to arms, then success of U. N. would inevitably follow," Mr. MacDougall said. "There can only be right or wrong, justice or injustice," he continued, "and the full force of the member states must be asserted on the side of right and justice. Warfare has been brought home to civilians including the parliamentari-

(*Continued on page* 228)

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Step Up Output at Lower Cost

Operating on 180 cycle current, Thor High-Frequency Electric tools maintain virtually *constant speed* under load; have *more power* per pound; are light, compact and *easier to handle.* These characteristics provide extra efficiency for increased production with less cost. Running at unvarying, full-rated speed, the tools deliver greater work and power output in relation to power input . . . reducing operating cost. Maintenance costs are lower, too, because Thor high-frequency tools are made with fewer motor parts—all extremely simple and subject to little wear.

Generally, these benefits are realized *most* on mass production operations. If you use a total of ten or more tools—for drilling, reaming or tapping; grinding, sanding or polishing; screw driving or nut setting—a Thor engineer can show you how Thor High-Frequency Electric Tools will *pay* you on every job. Call your nearby Thor branch.

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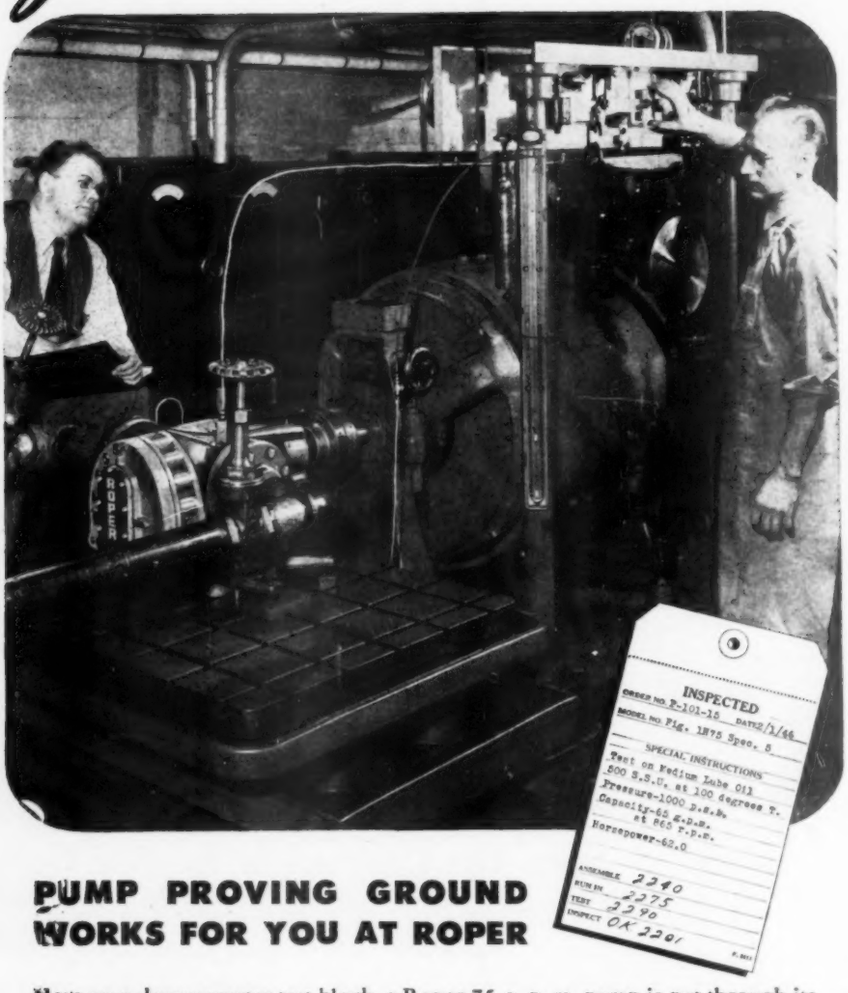
Your "TEST TICKET"



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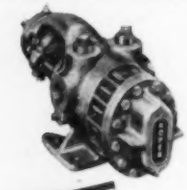

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(*Continued from page 226*)

ans. The people of the world realize that the perfection of scientific destruction has made this a last chance." In conclusion, he asserted that the veto power now held by the great powers under the United Nations Charter might wreck world organization, but he expressed his belief that Britain and the United States are willing to surrender it.

TULSA ASSN. ACTIVITIES INCLUDE PLANT VISIT

A visit to Dowell, Inc., Tulsa, for first hand information on plastics production and parts assembly, laboratory testing, and deep well testing, was included in the May activities of the Purchasing Agents Association of Tulsa. This plant visit was held on the 7th. On May 21st a motion picture showing the production and utilization of aluminum, was supplemented by a talk by J. J. Leonard, Oklahoma representative of the Aluminum Company of America. The June 11th meeting will be a post-convention affair, and on June 22nd, Purchasing agents and salesmen will join in a golf session at the Indian Hills Country Club.

April 23rd, the members enjoyed a meeting of the Tulsa Toastmasters Club at which speakers gave impromptu talks on various subjects, following which, talk organization, presentation, enunciation and pronunciation of words, and stance and gestures of speakers were analyzed and criticised.

DEVELOPMENTS IN AERONAUTICS SAGINAW VALLEY ASSN.

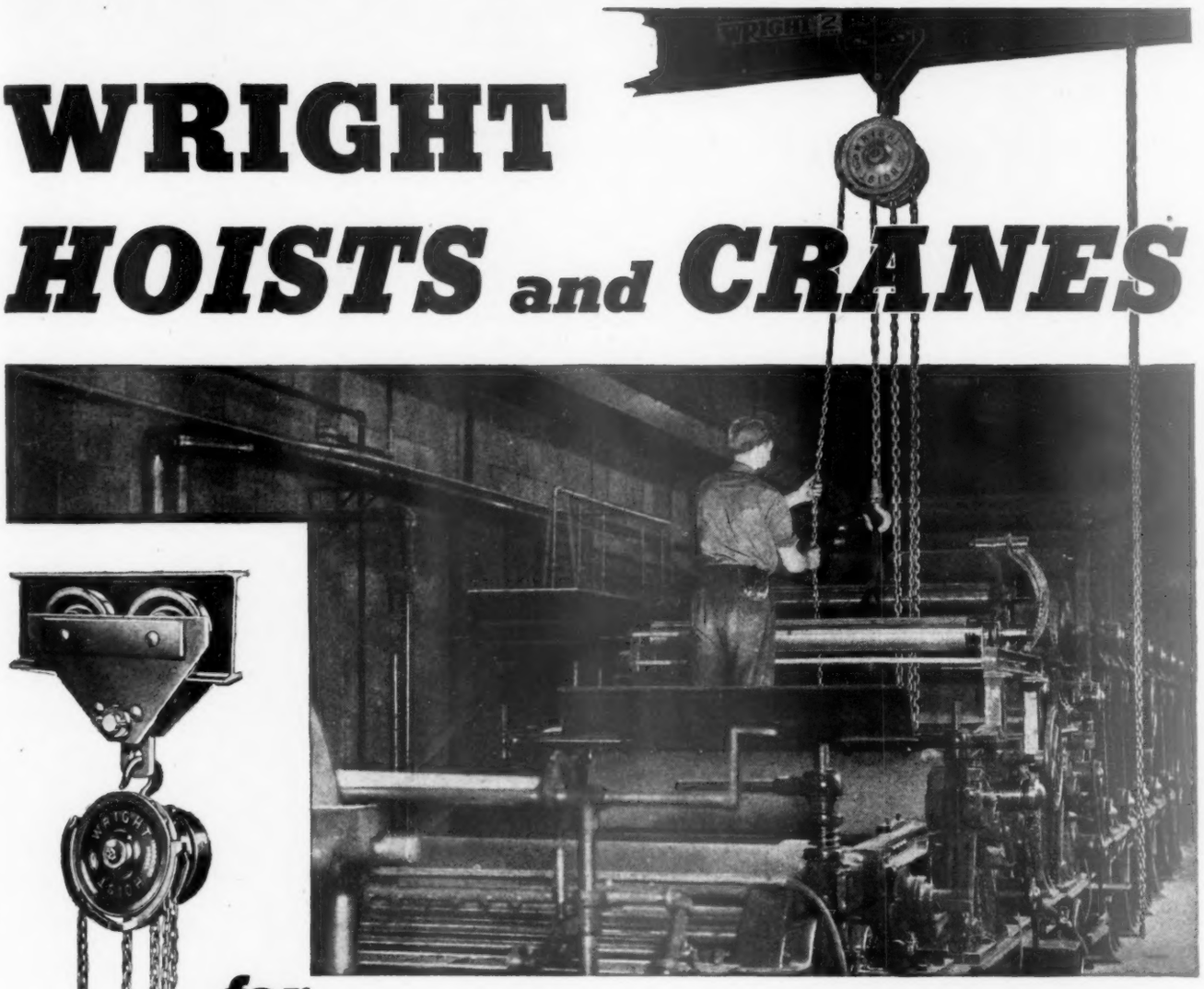
Dr. Edward A. Stalker of the Bay City Division of The Dow Chemical Company gave a chart-illustrated talk on New Developments in Aeronautics, at the April 9th meeting of the Saginaw Valley Purchasing Agents Association, held at the Wenonah Hotel, Bay City, Michigan. There were 33 members present, 59 per cent of the membership, and five guests.

C. L. PATCHIN HEADS CENTRAL NEW YORK ASSOCIATION

C. L. Patchin of the Firth Carpet Co., Auburn, N. Y., was elected president of the Purchasing Agents Association of Syracuse and Central New York, at the association's annual meeting held at the Onondaga Hotel, Syracuse, April 24th. Others officers elected are: First vice president, E. R. Francis, Rollway Bearing Co., Syracuse; second vice president, J. E. Edmonds, Lipe-Rollway Corp., Syracuse; treasurer, M. Riepel, Alexander Grant's Sons Co., Syracuse; national director, M. E. Jennings, Selflock Screw Products Co. F. J. Quinn, Easy Washing Machine Co., Syracuse, is secretary.

The motion picture "Carbon Black Treasure" was shown through the courtesy of the National Carbon Company.

WRIGHT HOISTS and CRANES



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Never before have manufacturers stood in such need of labor-saving — labor-aiding equipment, and production efficiency. Not only do you need a Wright traveling crane which will really put your ceiling to work, but you need Wright's years of experience to help you cut costs and speed production.

Wright material-handling equipment (cranes, hoists, and trolleys) is built in a wide range of capacities and to meet the most exacting specifications. Call your local Wright distributor (see metropolitan classified telephone directory). If your problem is special he will call in a Wright engineer. In the meantime, write for Wright Specification Bulletin, or Catalog 12-D.

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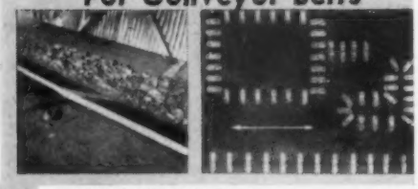
For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips and patches that can be made with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts

ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅝" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

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"BUSINESS LOOKS TO PURCHASING AGENT" — BUFFALO MEETING

BY N. R. ROSSOW

The Buffalo Association held its regular monthly meeting on Wednesday, April 10th in the ballroom of the Hotel Niagara, Niagara Falls, New York, arrangements for which were ably handled by John Pfisterer, assisted by Frank McMahon. As usual, an excellent dinner was served. President Bob Cavanaugh presided.

Wilbur F. Connell, Niagara Falls City Councilman, extended his sincere welcome to the visiting members from the Toronto & Hamilton Associations as well as to the visiting members from Buffalo.

President Cavanaugh called on E. M. Fletcher, President of the Hamilton Association, who in turn introduced the following guests from across the border. Julian Davies, Hamilton, Vice-President District No. 5 and President Canadian Council; Robert Cross, Hamilton; Cecil Callowhill, Hamilton; Robert Moore, Hamilton; Alec Yule, Niagara Falls; William Cook, Hamilton. Others included: P. A. Walker, Ernest Smith, Wm. Buckles, Arthur Dyer, John Stott and C. Potdeoin. President Cavanaugh also introduced Mr. Kittinger of the Syracuse Association.

Wm. Gamble, in his usual smooth style, recognized the recent honor bestowed on Past-President Paul Nolan on his election to Secretary, Pratt & Lambert, Inc.

The association welcomed Ernie Bursch and Joe Schwalback, former servicemen, who were attending the meeting for the first time since their return to "civies." Dr. Brumbaugh, University of Buffalo, was a welcome guest as usual.

Stuart Heinritz, editor of PURCHASING Magazine, was a guest speaker. Speaking on the subject "Business Looks to the Purchasing Agent," Mr. Heinritz pictured purchasing men as playing an extremely important role in the reconversion program. Each and every P. A. should appoint himself as a committee of one to make a study of values. Today it is the "ability to pay" rather than the value of goods received that takes all precedence. Periods of high price levels are not at all healthy to purchasing men as it encourages down grading and lowers standards.

Mr. Heinritz feels we are passing through the "morning after" period. A great deal of economic and optical pressure is being released. Everything we face today is part of a general trend and element of change has been a predominating factor. Our leaders believe this country is destined to take the leadership of the world. Nevertheless, we are facing a serious period of inflation with price control the only semblance of a national policy.

Mr. Heinritz briefly mentioned the threat of a new type of monopoly. A monopoply of human services having government sanction and suppoprt is a great danger to American industry.

The slowness of our reconversion program is not too alarming to Mr Heinritz. It took two years to get production rolling during a real war emergency. It is up to purchasing men to organize and think together. Purchasing Agents can do more for the integrity of the American dollar than any other group. Each and every one should prepare to meet his responsibility by getting tough—demand value, consider the profitable aspect, get scientific, and practice real cooperation. It is only through a common policy and a common effort that we can meet the present trend.

* * *

THE DAYS OF GAS LIGHTING ALLENTOWN MEETING

Henry W. Parker, assistant operating manager of the Allentown-Bethlehem Gas Company, gave an interesting talk on the history of illuminating gas at meeting of the Purchasing Agents of the Lehigh Valley, at the Elks Club, Allentown, Pa., March 25th.

Mr. Parker stated that the first use of gas for lighting was by one William Murdock, an Englishman, who in 1792 lighted his home and office with gas produced in an iron retort near his home. In 1807 gas was used for illuminating the first of the London streets to be so lighted. In 1815 gas meters were developed, and were known as "mystery boxes". In Allentown a Dr. Danowsky built a small gas plant in his back yard, supplying his own home and the homes of neighbors with gas. Some people used gas that was delivered to them in large bags, the bags being attached to a lead-in pipe line which delivered the gas to bags in basements, flow being created by the pressure of bricks or other weights on the bags.

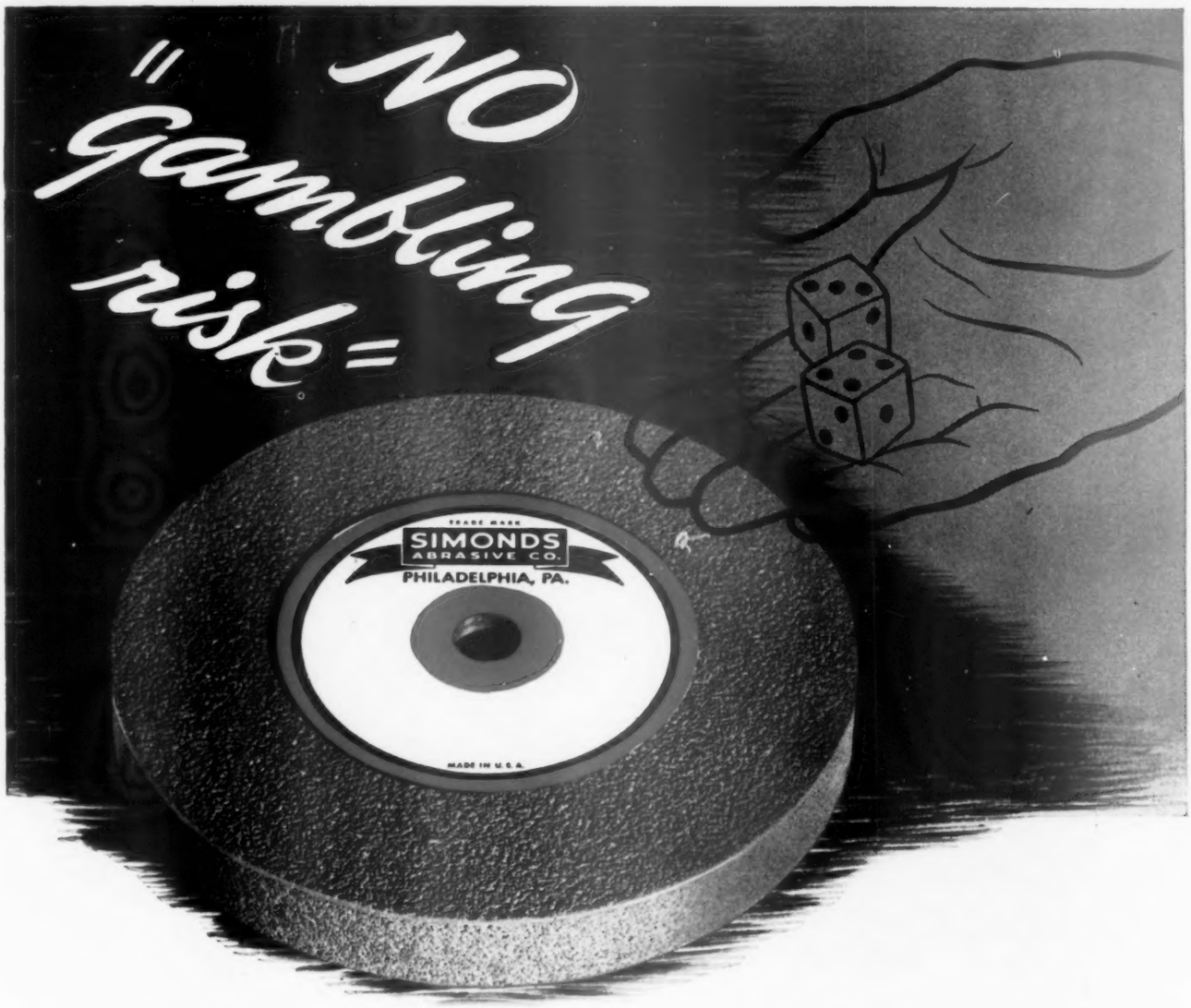
* * *

"STORY OF THE DREAM BOAT" HARTFORD, CONN.

"The Story of the Dream Boat" was the subject of talk by Colonel George R. Stanley of the sales division of the Chandler Evans Co., South Meriden, Conn., at meeting of the Purchasing Agents Association of Hartford County, Conn., at the Hotel Bond, Hartford, Conn., April 16. Col. Stanley was pilot of the B-29 plane known as the "Dream Boat" during the war, which flew non-stop from Guam to Washington in 36 hours (8,200 miles), and from Burbank, Calif. to Floyd Bennett Field, Long Island, New York, in five hours and 25 minutes. He was the first person to fly a B-29 into the Philippines, to fly a B-29 into Okinawa, and also into Japan.

Louis J. Schuster, assistant treasurer of the Chase Brass & Copper Co., and Earl Lea, vice president and treasurer of the Lea Manufacturing Co., Waterbury, Conn., were "guest experts" at meeting of the association's advance class

(*Continued on page* 234)



Efficient means of selection—control in manufacture that leaves nothing to chance—economical, lasting sureness of performance—these are some of the winning qualities that swing the odds solidly in favor of peak production efficiency when you use Simonds Abrasive Wheels. Thousands of combinations of various types and sizes of grain in every required structure and bond make up the complete line of Borolon* (aluminum oxide) and Electrolon* (silicon carbide) products for all your production and tool room needs. For roughing, cutting, snagging or finishing, for effective, long lasting performance on any material from steel to plastics, Simonds Abrasive Wheels are your best bet. Grinding wheels of every size and shape; Segments, Mounted Wheels and Points; Grains, Bricks and Sticks give new economy and long lasting efficiency when used on the jobs for which they are intended.

You will find Simonds Abrasive distributors, located in all principal cities, eager and ready to help you select the particular Borolon and Electrolon product adapted to every specific job.

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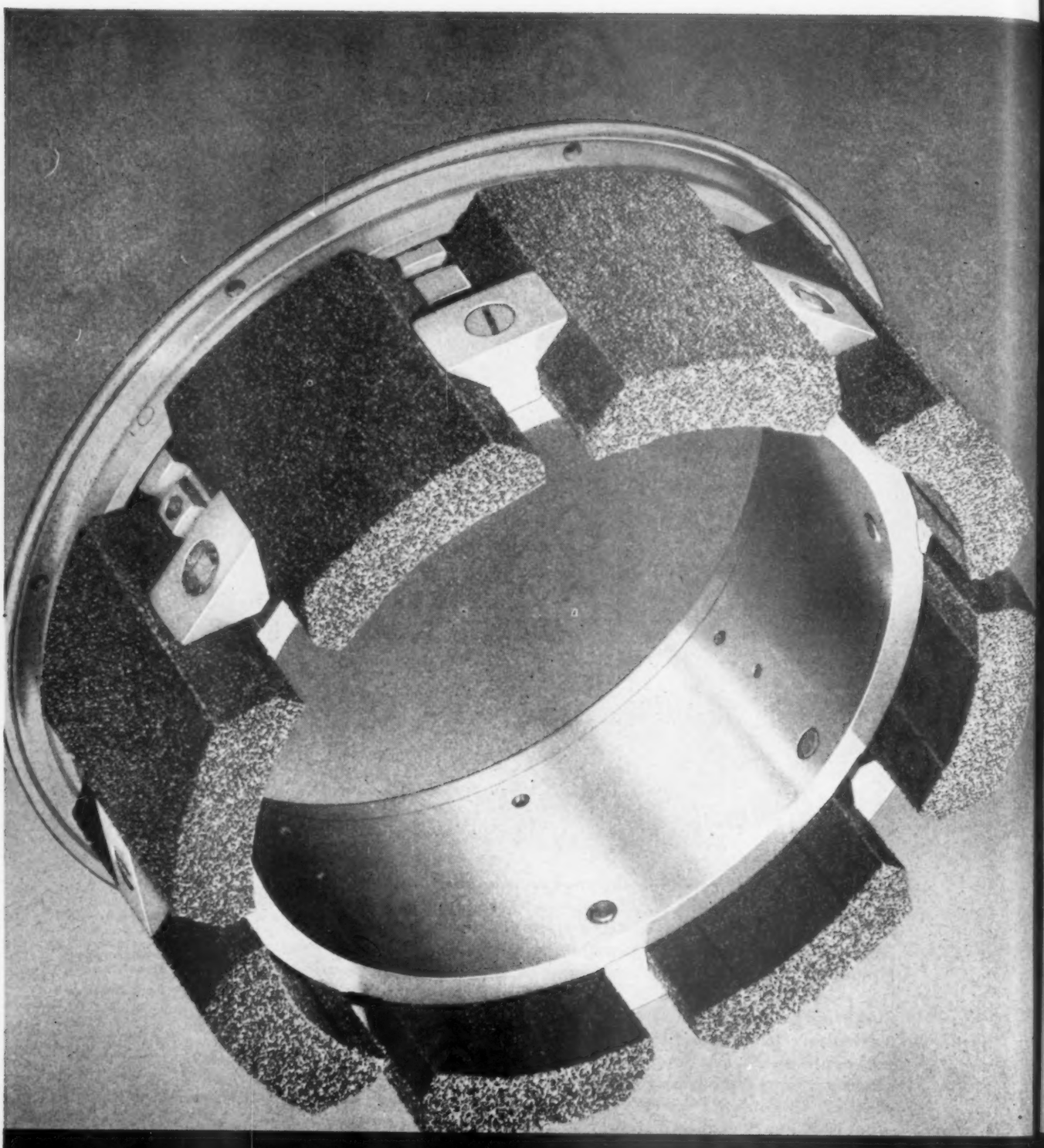

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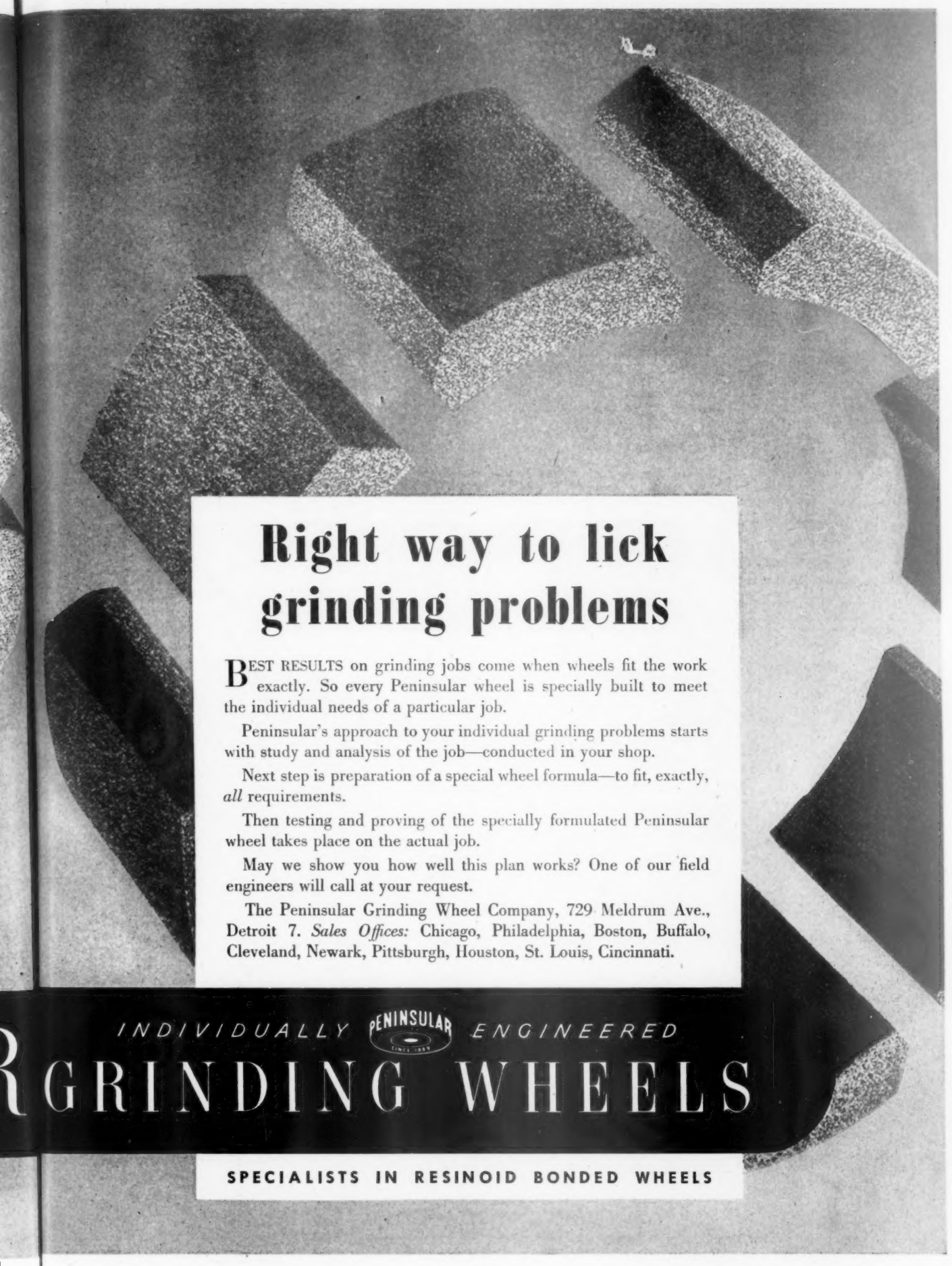

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RED GIANT LIFTRUCKS

Types: 1 stroke, 2 stroke and multiple stroke hydraulic. Capacities up to 15,000 lbs.

This Model G truck lifts within an arc of over 250°. Ideal for operation in narrow spaces.

They are simplicity itself — no expensive and intricate parts to get out of order. Low first cost justifies purchase for occasional use only and for constant use as many as can be used to save time and labor.

RED GIANT LIFTRUCKS' standard equipment includes Non-Kicking Handle, Center Suspension Latch, Timken Roller Bearings, Rolling Cam Release, Shock Absorber Release Check, Rear Links Welded into One Solid Unit.

Reasonably prompt deliveries at this time depending on specification. See Revolvator agent in your locality or send us details of your requirements for liftrucks, portable, hydraulic and traction elevators.

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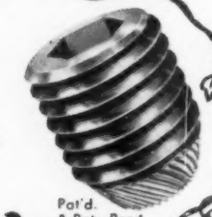

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Socket Set Screw with the Knurled Point

Just won't shake loose, . . . because the knurled point of the "Unbrako" Socket Set Screw digs in and holds tight, against even the most stubborn vibration and therefore it is a self-locker. Yet, this screw can easily be backed-out with a wrench and used again and again. In sizes from #4 to 1½" in diameter; full range of lengths. Write for the "Unbrako" Catalog.

"Unbrako" and "Hallowell" products are sold entirely through distributors.

Knurling of Socket Screws originated with "Unbrako" in 1934.

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(*Continued from page* 230)

in purchasing, the topic under discussion being "What Reports, if any, should the purchasing department make to management?"

MOTION PICTURES ON GLASS PRODUCTION — MILWAUKEE

Harlan Hobbs of the Film Division of Owens-Illinois Glass Company, Toledo, Ohio, addressed the May 14th meeting of the Purchasing Agents Association of Milwaukee, accompanying his talk with the showing of three motion pictures, namely, "Your Richest Gift", a sound and color picture on the saving of eyesight; "Now For Tomorrow", on the manufacture of glass bottles; and, "This is Libby", a tour of the Libby-Owens-Ford Glass plant.

Members of the Marquette University class in purchasing attended the meeting and were awarded certificates by Dean Stewart Scrimshaw and Professor George Knick. Prizes were awarded to the students presenting the five best papers on the subject "Strengthening Relations Between Purchasing, Engineering, and Production Departments."

The association's entertainment committee announces that arrangements had been made for holding the annual meeting and golf party at North Hills Country Club on June 14.

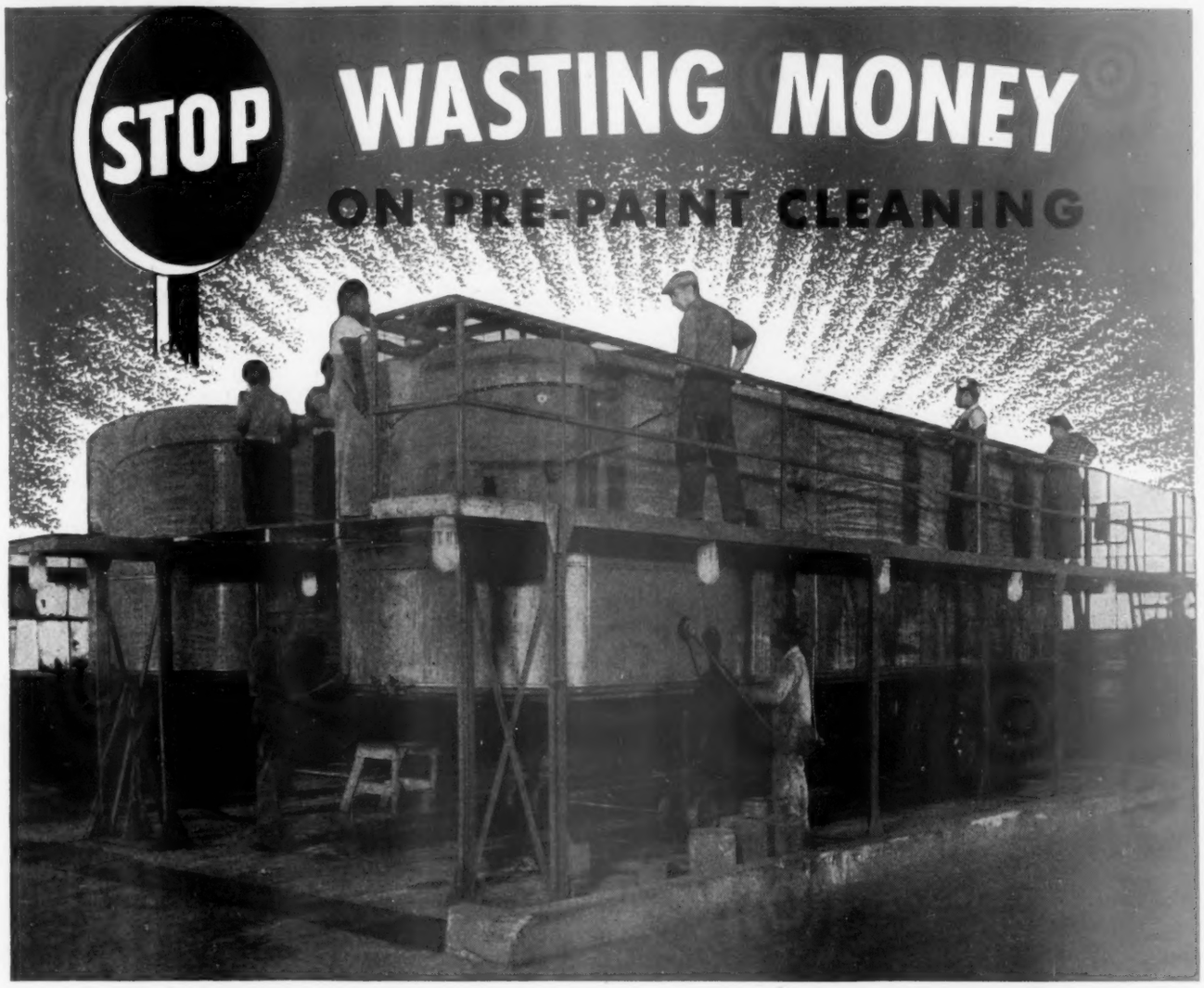
L. L. JONES HEADS FORT WORTH ASSOCIATION

L. L. Jones, Trinity Portland Cement Co., Fort Worth, Tex., is the new president of the Purchasing Agents of Fort Worth, Texas. Other new officers elected at the recent annual election are: H. C. Jones, Fort Worth Poultry & Egg Co., first vice president; Buyrl Wilson, Double Seal Ring Co., second vice president; S. J. Johnston, Acme Brick Company, secretary-treasurer; Walter Bell, Tarrant County, national director. New members of executive committee— E. E. Edwards, Pure Oil Co., and W. R. Casstevens, Fort Worth Structural Steel Company.

Moving picture entitled "Life Lines in Industry" showing the production of Crane Valves, was shown at the association's March 19th meeting at the Worth Hotel, by Geo. P. Sherry, sales manager, Morrison Supply Company.

SHOW PLASTIC MOLDING FILM AT TWIN CITY MEETING

James Thomas, sales manager of the Minnesota Plastics Company, St. Paul, Minn., discussed the broad subject of plastics at the April 10th meeting of the Twin City Association of Purchasing Agents at the St. Paul Athletic Club, his talk being followed by a showing of the colored sound film "The Shape of Things to Come" through the courtesy of the Boonton Moulding Company, Boonton, N. J.



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This electrically zinc-coated and chemically-treated sheet comes to you clean and in prime condition for painting. It does not rust in storage. All you need do is to remove with naphtha or a vapor degreaser any dirt, grease or oil that may have accumulated on the surface during your fabricating operations.

That should be sufficient reason for using Republic ELECTRO PAINTLOK—but there's more to the story. You can fabricate it any way you please and the zinc coating will stick tight—no cracking, peeling, flaking or powdering. Paint and lacquer go on readily by any method—stay on indefinitely. And should the paint film be scratched or damaged, the zinc coating protects against under-film corrosion.

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Republic Electro Zinc Plated Products include ELECTRO PAINTLOK in sheets and coiled strip up to 60 inches wide and gauges from 12 to 24—also ELECTRO ZINCBOND in sheets up to 48 inches wide, coiled strip up to 60 inches wide, and gauges from 25 to 37.

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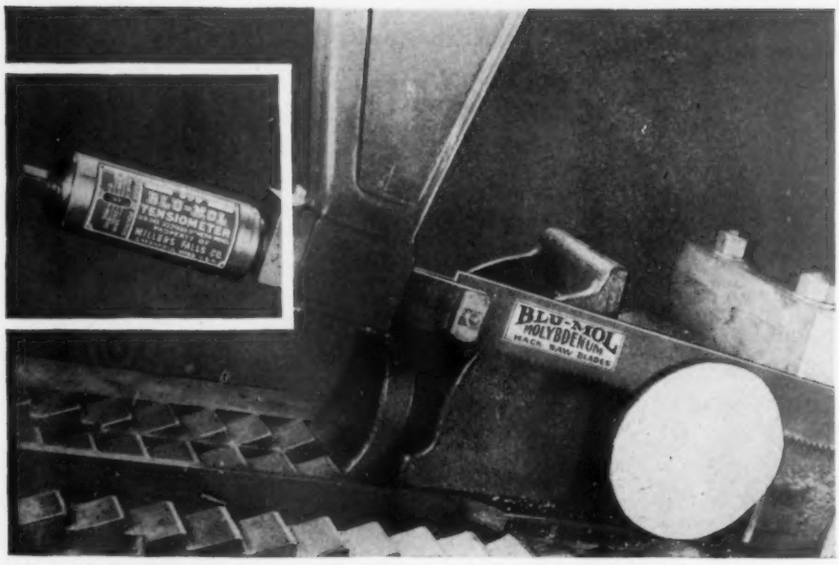
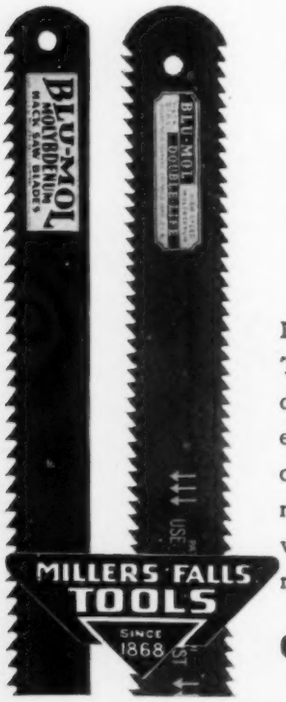


The new BLU-MOL "TENSIOMETER"

offers longer blade life, more accurate cutting

A small cylinder quickly attached to your hack saw machines, the Blu-Mol "Tensiometer" can effect substantial savings and at the same time enable your plant to produce better work. By positively controlling any desired tension from 0 to 4,000 pounds, the Tensiometer definitely:



1. Improves the accuracy of cut.
2. Maintains constant tension in spite of lengthening of the blade due to heating and eye elongation.
3. Absorbs shocks, minimizes blade breakage.
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Let us prove to you how much the Blu-Mol Tensiometer and Blu-Mol High Speed Molybdenum Blades, single or double edge, can improve efficiency in your plant. Just give us the name of the individual supervising metal sawing, the name of machines and sizes of blades used, and we will arrange a run right on your own machines that will show some surprising results.

One Thing in Common — *Quality!*

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STATIONERY AND PAPER MONTREAL COMMODITY CLINIC

"Stationery and Paper" was the discussion subject at Commodity Clinic lead by Wm. E. Leeson at the May 21st meeting of the Purchasing Agents Association of Montreal, preceding the regular dinner meeting. F. W. Bruce, vice president and general manager of the Aluminum Company of Canada was guest-speaker at the dinner meeting.

HOUSTON ASSN. ENTERTAINS FOREIGN COUNSELS

The Purchasing Agents Association of Houston, Tex., at its April meeting, entertained all of the foreign counsels in Houston. Speaker for the meeting was R. E. Smith, member of the foreign trade committee of the Houston Chamber of Commerce and chairman of the Good Neighbor Commission of the State of Texas.

T. E. HALBROOK HEADS PITTSBURGH ASSOCIATION

T. E. Halbrook, St.. Joseph Lead Co., was elected president of the Purchasing Agents Association of Pittsburgh, at annual election of that body. Other new officers are: Vice President, A. J. Bodenham, Fort Pitt Bridge Co.; Treasurer Frank R. King, Colonial Supply Co., Secretary, C. H. Rindfuss, Pittsburgh Screw & Bolt Corp., National Director, A. W. Anderson, Kerotest Mfg. Co. Local Directors: M. E. Carlisle, Pittsburgh Plate Glass Co.; E. F. Schaefer, P. & L. E. R. R.; D. E. Winslow, West Penn Power Co.; J. P. Wood, Fort Pitt Steel Casting Div.; T. R. Zenk, Latrobe Electric Steel Company.

"YOUR VOICE — HAVE YOU HEARD IT?" — Easton

The Purchasing Agents Association of The Lehigh Valley, at its April 23rd meeting in Hotel Easton, Easton, Pa., heard Russell R. Schooley, Easton councilman give an interesting talk on "Your Voice—Have you Heard It?" There also was a showing of the Taylor-Wharton Iron & Steel Company's film "3000 Pounds Per Square Inch." New members welcomed into the association were Howard Parker, Magnetic Windings Co., Easton, and J. H. Shafer, Roller-Smith, Bethlehem, Pa.

RELATES EUROPEAN EXPERIENCES AT CANTON MEETING

Some fifty members and guests attending the April 17th meeting of the Purchasing Agents Association of Canton, Ohio listened with keen interest to a relation by Sherlock Evans, who served as a field representative of the American Red Cross with the American armies in Europe, of his experiences in the European theater of operations. Though citing a few humerous incidents concerning American troops, Mr. Evans stressed that

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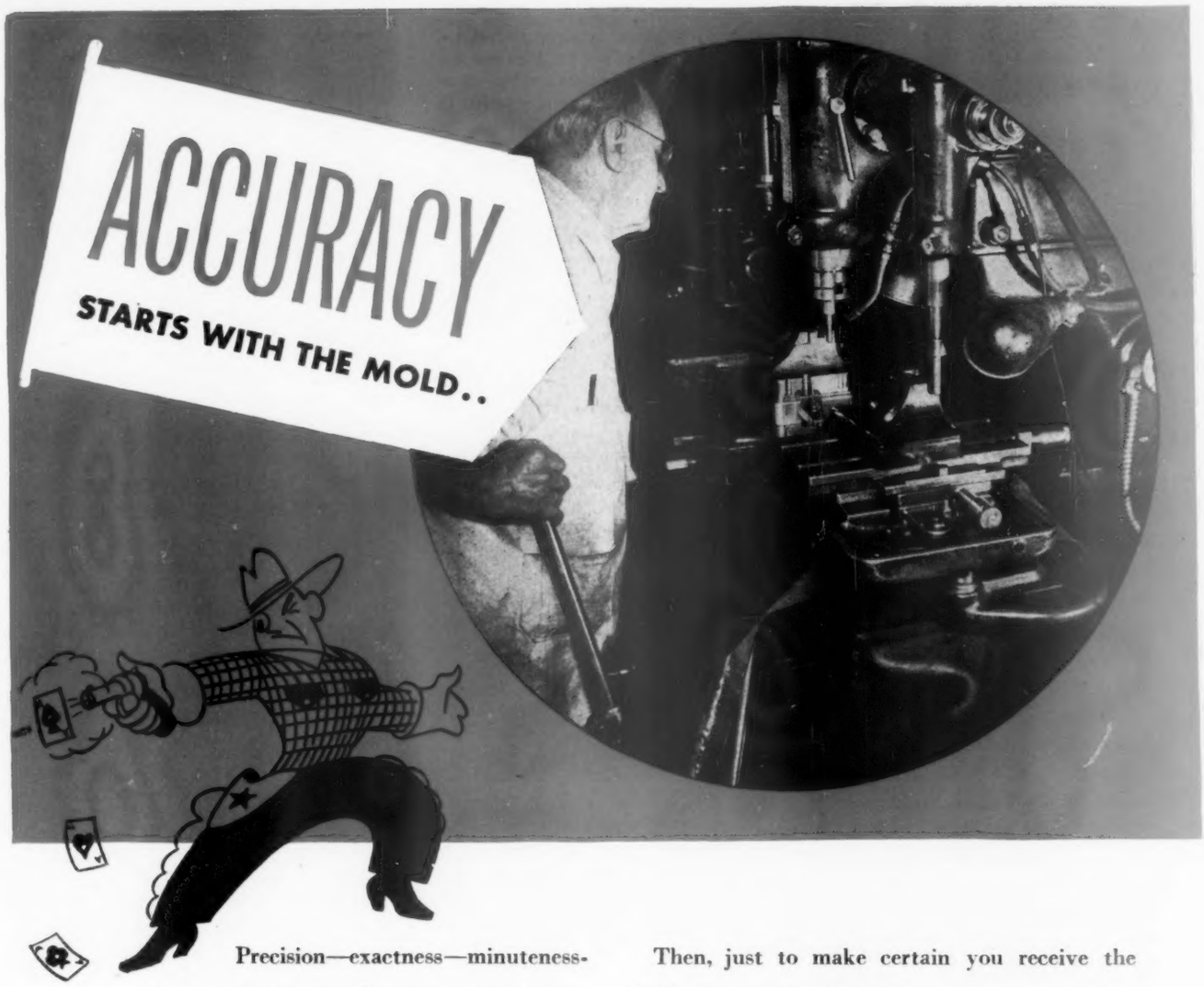

Precision—exactness—minuteness-to-detail are all synonyms for accuracy. Choose whichever word you will, we in the plastics business know that the primary requisites for a perfect, finished article are accurate molds. So, here at General Industries high technical skill and fine machining ability go into making them. This extreme care pays off in extra dividends for you—because an accurate mold cuts down machining operations, assures you quicker delivery—and, above all, guarantees a positive meeting of specifications.

Then, just to make certain you receive the finished product "just the way you want it", we maintain a series of constant tests and checks, on the finished part, with precision instruments.

So you see, from the time you come in to consult us about your product, until final delivery is made, General Industries leaves nothing in the plastics molding job to the element of chance. There's no substitute for knowledge and experience—both of which are here at your disposal on your plastics problems.

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GRANT DEPENDS ON SUNROC

THE W. T. GRANT CO., operators of a nationally prominent chain of department stores, is keenly aware of the importance of customer-comfort in modern merchandising. Grant bought the best water coolers money could buy . . . chose Sunrocs on their record.

W. T. Grant is just one of the many business and industrial concerns, from coast to coast, which have followed the lead of the Federal Government, and adopted Sunroc Water Coolers. Wherever people assemble, or are employed, Sunroc Water Coolers are needed to supply cool, refreshing drinking-water.

Trouble-free operation, year in and year out, with low maintenance-costs, is the result of Sunroc concentration on one product . . . water coolers; and devotion to one ideal . . . *quality*. Perfected Sunroc models, all types and sizes, are now available. For full information, write Dep't PHG-6, Sunroc Refrigeration Company, Glen Riddle, Pa.

"There's nothing like a cool drink of water"

SUNROC
Water Coolers
GLEN RIDDLE, PA.

(*Continued from page 236*)

there is no glamour in war, and stated that a "soft peace" is not justified according to his observations in enemy countries. He said that an intensive period of education among the youth in Germany in particular must be carried on in order to offset the long period of Nazi influence.

ST. LOUIS P. A.'s HEAR TALK ON CIVIC DEVELOPMENT

George C. Smith, president of the St. Louis Chamber of Commerce discussed the interesting topic "Prospects for the St. Louis Metropolitan Area" at the May 21st meeting of the Purchasing Agents Association of St. Louis, at the Hotel Coronado.

HERBERT WEINDEL HEADS UTAH ASSOCIATION

Herbert Weindel, Union Pacific Railroad Co., St Lake City, Utah, was elected president at the annual meeting of the Purchasing Agents Association of Utah held on May 9th. Other officers elected are: Vice president, O. W. Kasteler, The Lang Co.; Secretary, John E. Carr, Zion's Co-Operative Mercantile Institution; Treasurer, W. C. Allen, Utah Power & Light Company, — all of Salt Lake City; National director, J. C. Stone, Ogden Iron Works, Ogden, Utah.

WM. J. YOUNG HEADS BALTIMORE ASSOCIATION

William J. Young, The Baugh Chemical Co., was elected president of the Purchasing Agents Association of Baltimore, at annual meeting of that group held at the Lord Baltimore Hotel May 15th. Other officers elected are: Vice president, Anthony J. Peroutka, Federal Reserve Bank; Treasurer, Andrew J. Keys; Secretary, William J. Francis; National director, Lingard I. Whiteford, Maryland Glass Corporation; Alternate national director; Alfred H. Schultz, Jr., Revere Copper & Brass, Inc.; member board of directors, John H. Crowther.

NEW OFFICERS ELECTED WESTERN MASSACHUSETTS

New officers of the Western Massachusetts Purchasing Agents' Association, elected at the annual meeting held on April 11th in the Hotel Kimball, Springfield, Mass., are: president, F. W. Fleury; first vice president, Carl C. Tootill; second vice president, D. B. Sistare. John B. Donovan was reelected secretary-treasurer. Guest speaker at the meeting was Charles L. Sheldon, N.A.P.A. president.

V. S. COSTELLO HEADS ELMIRA ASSOCIATION

V. S. Costello, Trayer Products Co., Elmira, N.Y., was elected president of the Purchasing Agents Association of Elmira, at the annual election in April. Other officers elected are: First vice president, V. D. Bates, American-LaFrance Foamite Corporation; second vice president, Wilber Symonds, Elmira Foundry Co., Inc.; secretary, Charles Swift, Swift Lubricator Co.; treasurer, F. R. Baker, American-LaFrance-Foamite Corporation. The election was held at the plant of the Troy Engine & Machine Co., Troy, Pa., marking a combined annual meeting and plant visitation.

Members of the association visited the Plant of the Troy, Pa. Engine & Machine Company on April 24th, the plant visitation being followed by dinner at the Troy Hotel where Jack Parsons, president of the company, gave a brief history of the plant which was established in 1873.

The association resumed its annual buyers-sellers picnic, or Buy-sel Picnic, this month, this affair having been discontinued during the war.

N. A. P. A. SECRETARY AT EASTERN N. Y. MEETING

Guest speaker at the April 18th meeting of the Purchasing Agents Association of Eastern New York, held at the Mohawk Golf Club, Schenectady, was George A. Renard, secretary of the N.A.P.A.

WATER TRANSPORTATION LOS ANGELES

Purchasing Agents Association of Los Angeles, Calif., at their April 25th luncheon meeting in the Chamber of Commerce Bldg., heard Peter H. Toland, cargo surveyor for Bethlehem Pacific Coast Steel Corp., discuss problems of materials shipping by water. "Water Freight Claims Prevention" was his subject.

THINGS TO COME ROCHESTER MEETING

Dr. Hilton Ira Jones, scientist, spoke on "Peeps at Things to Come" at the April 24th meeting of the Purchasing Agents Association of Rochester, at the Sheraton Hotel, Rochester.

FIBERGLAS FILM SHOWN AT MUSKEGON MEETING

The motion picture "Fibreglas Reports to Industry" was shown at the April 16th meeting of the Purchasing Agents Association of Muskegon, through the courtesy of the Corning Glass Works. The showing of the film was followed by a discussion on "How to Strengthen the Relations Between Purchasing and Engineering-Production".

SURPLUS PROPERTY DISPOSALS TWIN CITY MEETING

Edward S. Clark, Deputy Regional Director in charge of Disposals of the War Assets Administration, spoke on "The War Assets Administration and its Functions" at the May 8th meeting of the Twin City Association of Purchasing Agents, at the Minneapolis Athletic Club.

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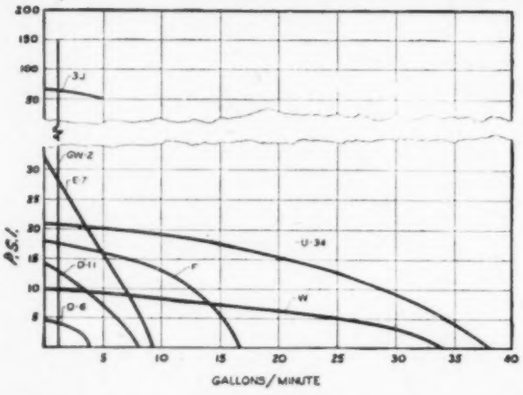
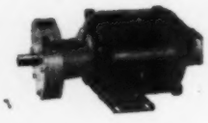
COVER A WIDE RANGE OF PERFORMANCE



The performance chart shown above typifies the wide range of performance available through the selection of Eastern Midget Pumps. These pumps can provide the right equipment for your needs where small size and light weight combined with high performance and economy of operation are factors. They may be equipped with the easily adjustable stuffing boxes or rotary seals and will not leak at several times the maximum working pressures. Weights are from 2¾ to 100 lbs., capacity from ½ to 70 G.P.M. and pressures range up to 250 P.S.I. Standard models of many pumps are available in Monel Metal, Stainless Steel, Hastelloy "C", Cast Iron, Bronze and other metals and alloys. Models are motor driven, including Underwriters' approved explosion-proof motors, air driven or belt driven. Write for NEW CATALOG describing entire line of pumps.



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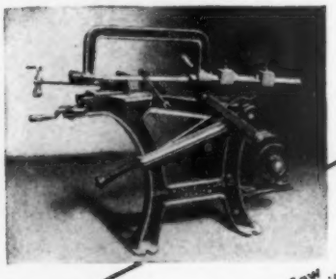

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No. 1 Draw Cut Hack Saw Dry cut, 4" x 4" capacity. A sturdy saw well-known for its dependability, economy, and invaluable service in the small shop or shop department. Simple and efficient with low original, maintenance, and blade cost.

MARVEL SAWS

No. 2 Draw Cut Hack Saw. Companion to the No. 1 but with a normal 6" x 6" capacity which can be increased to 8" x 8" by shortening the stroke with adjustable crank. The No. 2 MARVEL also has a swivel vise which is removable from the "T" slotted bed. Permitting special fixtures to be mounted. Both machines are available in belt and motor driven models. Motor driven models can also be furnished mounted on portable truck.

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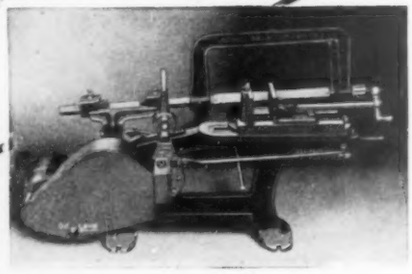

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HARVEY T. SPRANG HEADS TORONTO ASSOCIATION

Harvey T. Sprang, P.A., Frankel Bros. Ltd., was elected president of the Purchasing Association of Toronto at the Annual Meeting and Past Presidents' Night of that body held at the Royal York Hotel Wednesday, May 8th. Other officers elected are: Vice president, George A. Davis, Plate & Structural Steel Products, and Russell J. Speers, United Steel Corp. Ltd.; and Frederick D. Brunke, Page-Hersey Tubes Ltd.; Honorary secretary, L. L. Liddle, A. R. Clarke & Co. Ltd.; Member of Canadian Council, George McDowell, Robert Simpson Co. Ltd.; National Director; A. E. Wilson, Toronto Envelope Company. Directors: Frederick B. Brookbanks, Ault & Wiborg Ltd.; Leslie R. Price, buyer, Spruce Falls Power & Paper Co. Ltd.; F. W. Smalley, Jas. Morrison Brass Mfg. Co. Ltd.; and C. Cecil Mills, Canadian General Electric.

Speaker for the evening was Dr. K. S. Bernhardt, Professor of Psychology, University of Toronto, who spoke on "Human Relations in Industry."

* * *

PAY VISIT TO BIRMINGHAM SOUTHERN COLLEGE

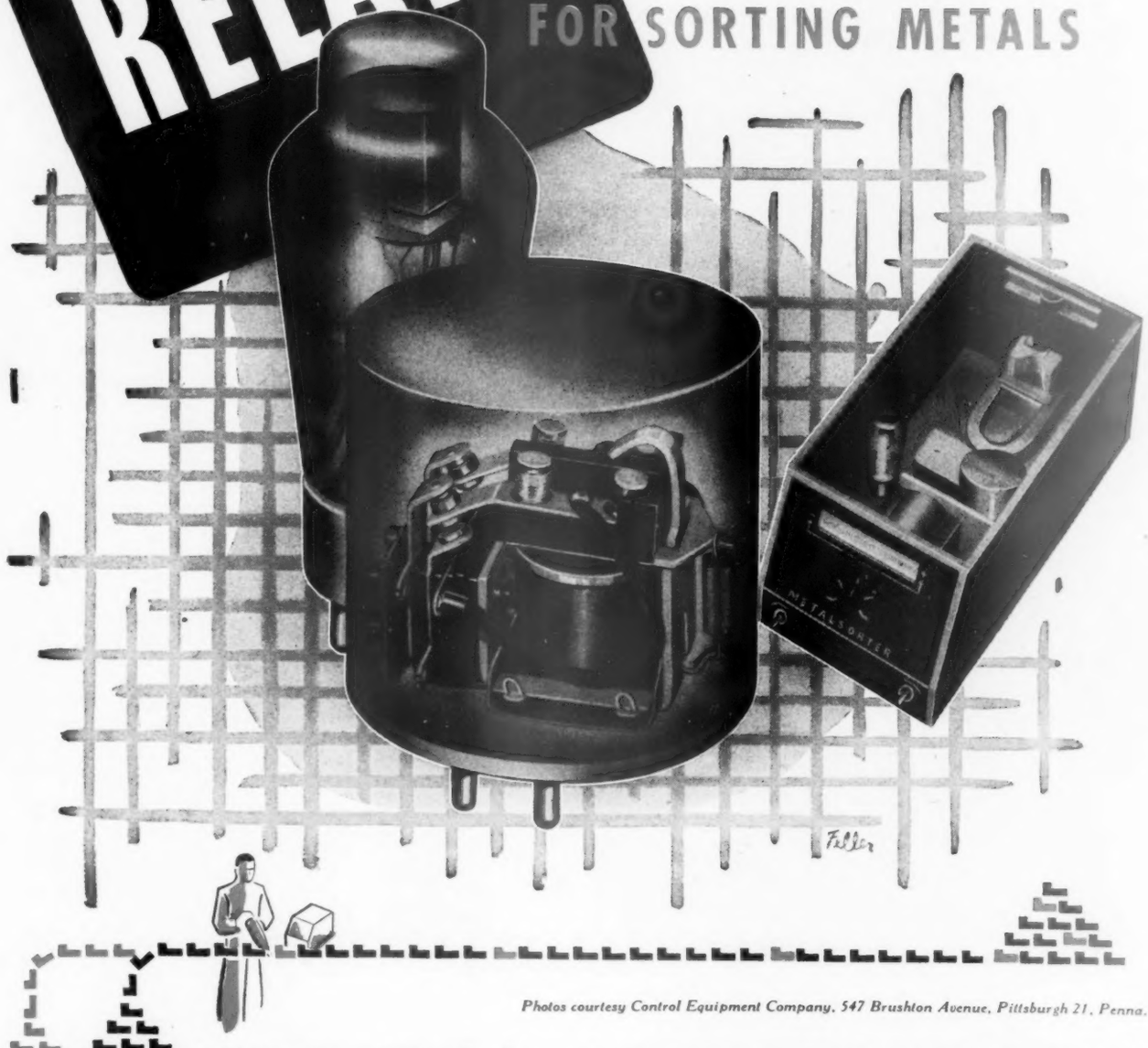
"We're going back to "Kollitch." Not for "Post-Graduate" work Nor for an "Onery Degree", but for an interesting visit to Birmingham Southern College. Check in at the College Book Store, Student Activities Building. Newman Yielding will then take over as "chaperone", only Webster says "chaperone" is a married woman!" So readeth bulletin received from the Purchasing Agents Association of Alabama. It was minus date of the event, possibly unnecessary for "kollitch" grads. Anyway, following the "kollitch" visitation, the visitors proceeded to the Airdrome Supper Club for the monthly dinner meeting.

* * *

EASTERN NEW YORK MEMBERS VISIT GIFFORD-WOOD PLANT

Members of the Purchasing Agents Association of Eastern New York, had the pleasure of a visit to the plant of The Gifford-Wood Company at Hudson, New York, Thursday, May 16th, following which dinner and business meeting was held at the St. Charles Hotel, Hudson. Following Commodity reports and discussions, the color-sound film entitled "Paper—Pacemaker of Progress," produced by F. C. Huyck & Sons, Albany, N. Y., was shown. The picture presents a dramatic story of the development of papermaking, starting with the invention of paper, the progress of the industry, and the contribution of paper in winning the war.

GUARDIAN RELAYS FOR SORTING METALS



Photos courtesy Control Equipment Company, 547 Brushton Avenue, Pittsburgh 21, Penna.

In this interesting application a Guardian Relay, the Series 150-A, regulates the duty cycle of a Thyratron tube to control the time involved operating a testing tool for metal sorting.

Unit shown is the Metalsorter which employs the tribo-electric effect on metals, steel and non-ferrous alloys. The principle is simple. An acceptable or standard metallic specimen is placed in the holding chuck of a reciprocating tool, and the test is made by rubbing the standard against the unknown for a controlled time. When a chemical or metallurgical dissimilarity between the chuck-held specimen and the unknown material occurs, a minute electrical current is generated and registered by an indicator on a calibrated dial. If the metals are alike, there is no current flow. Consequently, the operator is enabled to quickly identify, sort, or accomplish non-destructive testing of each item.

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C. IRVING HANSEN HEADS WASHINGTON ASSOCIATION

C. Irving Hansen, Director of Procurement, U. S. Maritime Commission, Washington, D.C., was elected president of the Purchasing Agents Association of Washington, at the annual meeting of that body held at the Mayflower Hotel May 14th. A. V. Hawkins, Purchasing Agent, Potomac Electric Power Co., was elected vice president; and A. W. Alexander, Assistant Purchasing Agent, Engineering & Research Corp., Riverdale, Md., was named Secretary-Treasurer. Elected to the Board of Directors were Clifton E. Mack, Director of Procurement, Treasury Department; E. P. Scully, General Purchasing Agent, Engineering and Research Corporation; and Roland M. Brennan, Purchasing Officer, District of Columbia. Mr. Mack was also elected National Director, and Mr. Scully, alternate National Director. Messrs. Mack and Brennan were appointed as a committee to report on the National Association convention which was held in Chicago the latter part of May.

Activities of Educational Committee

The president of the association, Grey Leslie, and the chairman of the Educational Committee, Clifton E. Mack, have been particularly active during the year in the matter of distributing educational material to the members. Case study classes are held each Monday night under the auspices of the committee on education, which are developing into advantageous group discussions of purchasing problems.

Four new members were welcomed into the association at the April meeting, namely: Julius Kallins, P.A., Cafritz Construction Co.; Frank F. Lunter, U. N. R. R. A.; Nathan M. Silverman, U. S. Maritime Commission; and Henry M. Cluff, Engineering and Research Corporation. A. R. Shakelford, also of the Engineering and Research Corp., and charter member, has returned from the military services.

Following election and disposal of other routine matters, Thomas R. Foster, Assistant Director of Procurement, Pennsylvania Central Airlines, lead a discussion on the subject of "Purchasing for Maintenance."

* * *

A. R. BRANE HEADS SPRINGFIELD, OHIO ASSN.

A. R. Brane is the new president of the Purchasing Agents Association of Springfield, Ohio, having been elected at the association's annual meeting held at the Shawnee Hotel, Springfield, on April 24th. Other officers elected are: J. G. Laihr, vice president; Carlos Stone, secretary; R. W. Rush, treasurer; D. F. Korinke, local director; Walter E. Moore, out of town director. Two new members were welcomed into the association, namely John L. Mercer and G. H. Eggleston.

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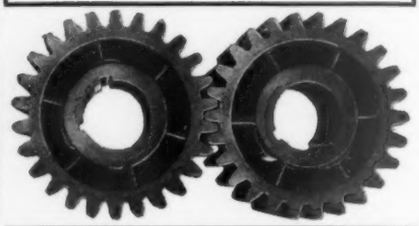

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1—Milwaukee Mod. 2K Vert. Miller, M.D., Ser. No. over 31/3610, very latest type, tbl. wkg. surf. 56" x 12", range: long. 28", cross 12", vert. 14", vert. move. of hed. 6", throat dep. 14".

2—Heald 72A5 Pl. Hyd. Int. Grinders, M.D., 3 motor drive, Ser Nos. over 4200, AC elect. equip., Red Hed. spins.

1—Bridgeford 36" x 56', 15 speed, grd. hed., Eng. Lathe, M.D., AC elect. equip., power rap. trav. to carr., compound rest, 2 steady rests, sw. over bed 38", sw. over carr. 26", dist. betw. cens. 48'.

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DISCUSS TRAFFIC MATTERS AT NEW YORK FORUM

"What the Purchasing Agent should not Know About Traffic Matters", was the subject of discussion lead by Harry F. Suiter, Traffic Manager, Merck & Co., and Charles B. Roeder, Traffic Manager, American Home Foods Inc., at the Forum meeting of the Purchasing Agents Association of New York, preceding the monthly dinner meeting at Builders Exchange Club, May 21st. Speaker at the dinner meeting was Merryle Stanley Rukeyser, economist and author, who spoke on "The Coming Phase of Greater Competition."

WM. H. GEHRING HEADS WILMINGTON INDUSTRIAL GROUP

William H. Gehring of the DuPont Company was recently installed as president of the Industrial Purchasing Agents Group, Wilmington, Del., at meeting in the Hotel DuPont. Other new officers are: Thomas E. Stevens, DuPont Company, secretary; P. H. Leinheiser of Worth Steel Co., treasurer.

MAGNESIUM FILM SHOWN AT TOLEDO MEETING

Dan W. Moll, vice president of the Hills-McCanna Co., Chicago, gave a talk on magnesium, its wartime uses and postwar utilization, at the March 21st meeting of the Purchasing Agents Association of Toledo, held at the Toledo Yacht Club. The moving picture film "Magnesium, the Miracle Metal" was also shown

NATIONAL NIGHT — NEW ENGLAND MEETING

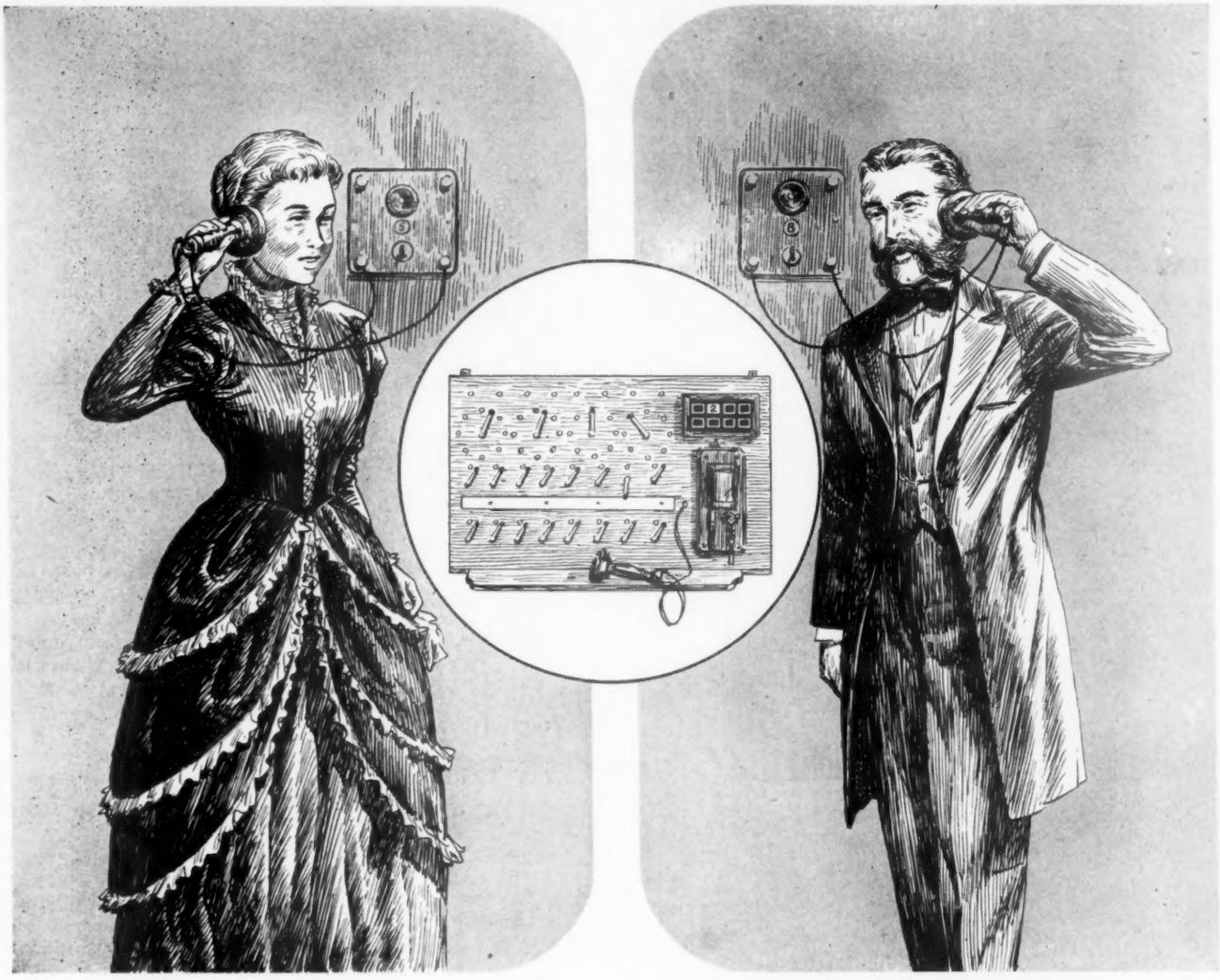
President Charles L. Sheldon of the N.A.P.A. and Vice President Everett A. Taylor, were guest speakers at the "National Night" meeting of the Purchasing Agents Association of New England, at Schraffts, Boston, April 9th.

BUYER-SELLER RELATIONSHIP PITTSBURGH MEETING

Thomas D. Jolly, Vice President in Charge of Engineering and Purchasing, Aluminum Company of America, spoke on "Buyer-Seller Relationship" at the April 16 meeting of the Purchasing Agents Association of Pittsburgh, at the William Penn Hotel. An added feature was the showing of the motion picture "Dutch Guiana".

DISCUSS JUVENILE DELINQUINCY BIRMINGHAM MEETING

Judge Emmett Perry of the Juvenile and Domestic Relations Court, Birmingham, Ala., was guest speaker at luncheon meeting of the Purchasing Agents Association of Alabama, at the Thomas Jefferson Hotel, Birmingham. His subject was "The Juvenile Court and Juvenile Delinquincy in Jefferson County".



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"WHAT DOES RUSSIA WANT" CINCINNATI MEETING

Ray Brock, radio analyst, author and traveler, spoke on "What Does Russia Want" at the May 14th meeting of the Purchasing Agents Association of Cincinnati, held at the Hotel Gibson.

ANNUAL LADIES' NIGHT TOLEDO

The Purchasing Agents Association of Toledo held its Annual Ladies' Night at the Toledo Yacht Club, April 18th. Following dinner, colored movies by Charles Howe on a "Mexican Vacation" and "Flying Over Maryland" were shown.

WROUGHT IRON FILM UTAH MEETING

Moving picture film entitled "Eternally Yours", delineating the history of wrought iron and its manufacturing process, was shown at the April 25th luncheon meeting of the Purchasing Agents Association of Utah, at Temple Square Hotel, Salt Lake City. S. W. Mote, chairman, educational committee, was in charge.

OPERATING-MANAGEMENT OF PURCHASING FORCE — CHICAGO

James Alfred Thorson, of Thorson and Thorson, Cleveland, Ohio, was guest speaker at the May 9th meeting of the Purchasing Agents Association of Chicago, at the Hotel Sherman, the title of his talk being "Operating-Management of Present Day Purchasing and Sales Forces."

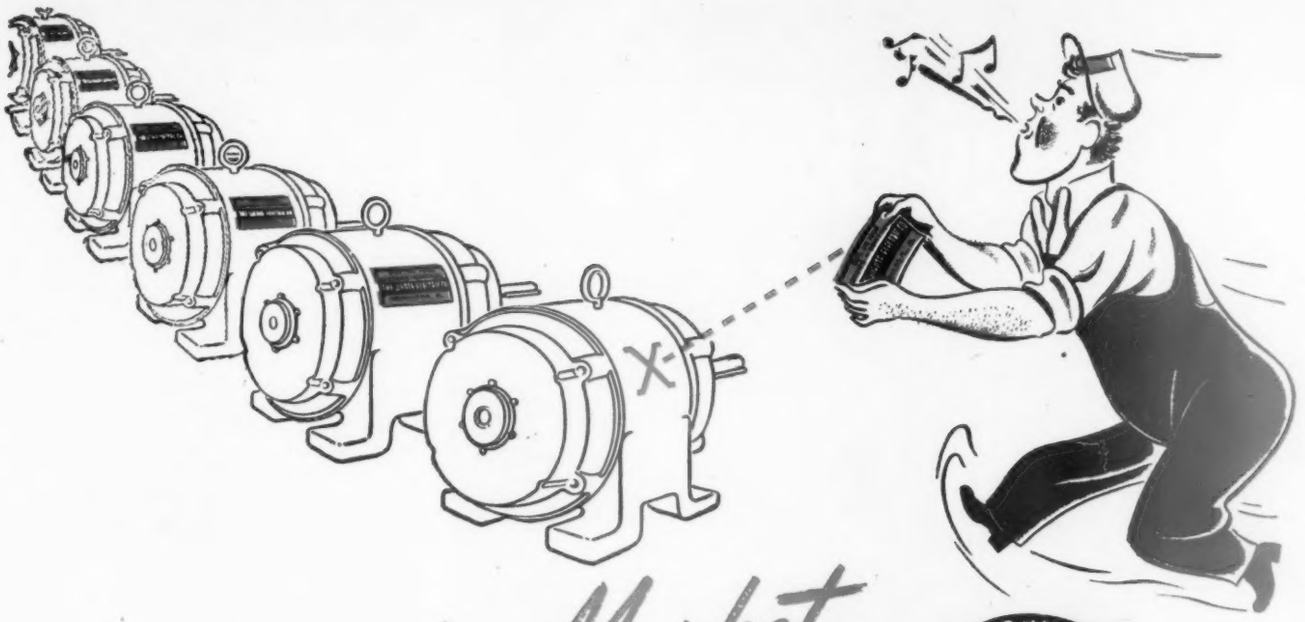
PRICE CONTROL NORTHWESTERN PENNSYLVANIA

An address by Dr. W. A. Brumbaugh, professor of economics at University of Buffalo, on "Should Price Control be Abolished," was highlight of the April 4th meeting of the Purchasing Agents' Association of Northwestern Pennsylvania, dinner-meeting followed directors meeting on the 4th at the Emery Hotel, Bradford, Pa. A number of the members of the Buffalo association attended the meeting.

ROCHESTER IND. BUYERS ELECT NEW OFFICERS

New officers elected for 1946-47 period at the April 10th meeting of the Rochester Association of Industrial Buyers, held at the Chamber of Commerce, are as follows: President, Harold Russell, Hawk-Eye Works of Eastman Kodak Co.; vice-president, J. Gordon Hall, Wollensak Optical Co.; secretary, Louis A. Mumford, Rochester Mfg. Co.; treasurer, M. J. Kuebel, Taylor Instrument Co On the board of directors are: Richard Welch, Bausch & Lomb Optical Co.; Howard M. Henry, Camera Works, East-

(*Continued on page* 248)



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(*Continued from page 246*)

man Kodak; and Mortimer Maier, past president.

Speaker of the evening was A. L. Terlouw of Eastman Kodak, who discussed "Color Photograph from the view point of the purchasing agent."

ANNUAL LADIES NIGHT HARTFORD

Annual ladies night dinner-dance and bridge party of the Hartford Purchasing Agents Association was held on April 27th at the Indian Hill Country Club. In charge of the meeting were Frank Schoen, Edward Flannery, Arthur Sage, W. A. Towle, Jr., and M. C. Folkins.

TALK ON MAYALAND SPRINGFIELD, OHIO

Charles Howe of the Chicago Tube & Iron Company gave a talk on economic conditions in Mexico and his experiences in Mayaland, at the April 10th meeting of the Purchasing Agents Association of Springfield, at the Shawnee Hotel, Springfield, Ohio. John L. Mercer, purchasing agent of the B & M Electric Co., was duly welcomed as a new member.

COLUMBUS P. A. S. RESUME PLANT VISITATIONS

For the first time since pre-war days, the Columbus, Ohio, Association of Purchasing Agents resumed plant visitations on April 12th, when they were guests of the Anchor Hocking Glass Corp. at Lancaster, Ohio. Dinner followed at the Lancaster Country Club, with Anchor Hocking Corp. as host.

CONSTRUCTION REGULATIONS ALABAMA

Paul P. Henderson, recently of the War Production Board and currently district manager, Civilian Production Administration, addressed the Purchasing Agents Association of Alabama at their April 25th dinner-meeting in the Thomas Jefferson Hotel on the subject of "New Construction Regulations." H. S. Swingle, fish culturist at Alabama Polytech, spoke on "Fish and Fishing," using colored slides to illustrate his talk.

PRICE ADVANCES FORT WAYNE

Recent O.P.A. rulings on price advances were discussed at the April meeting of the Fort Wayne (Ind.) Association of Purchasing Agents, held at the Chamber of Commerce. General opposition was voiced to the manner in which the price procedure is being handled. Following the discussion, Charles Albee Howe talked on the beauties of Guatemala, Yucatan and Mexico, illustrating his talk with colored slides.

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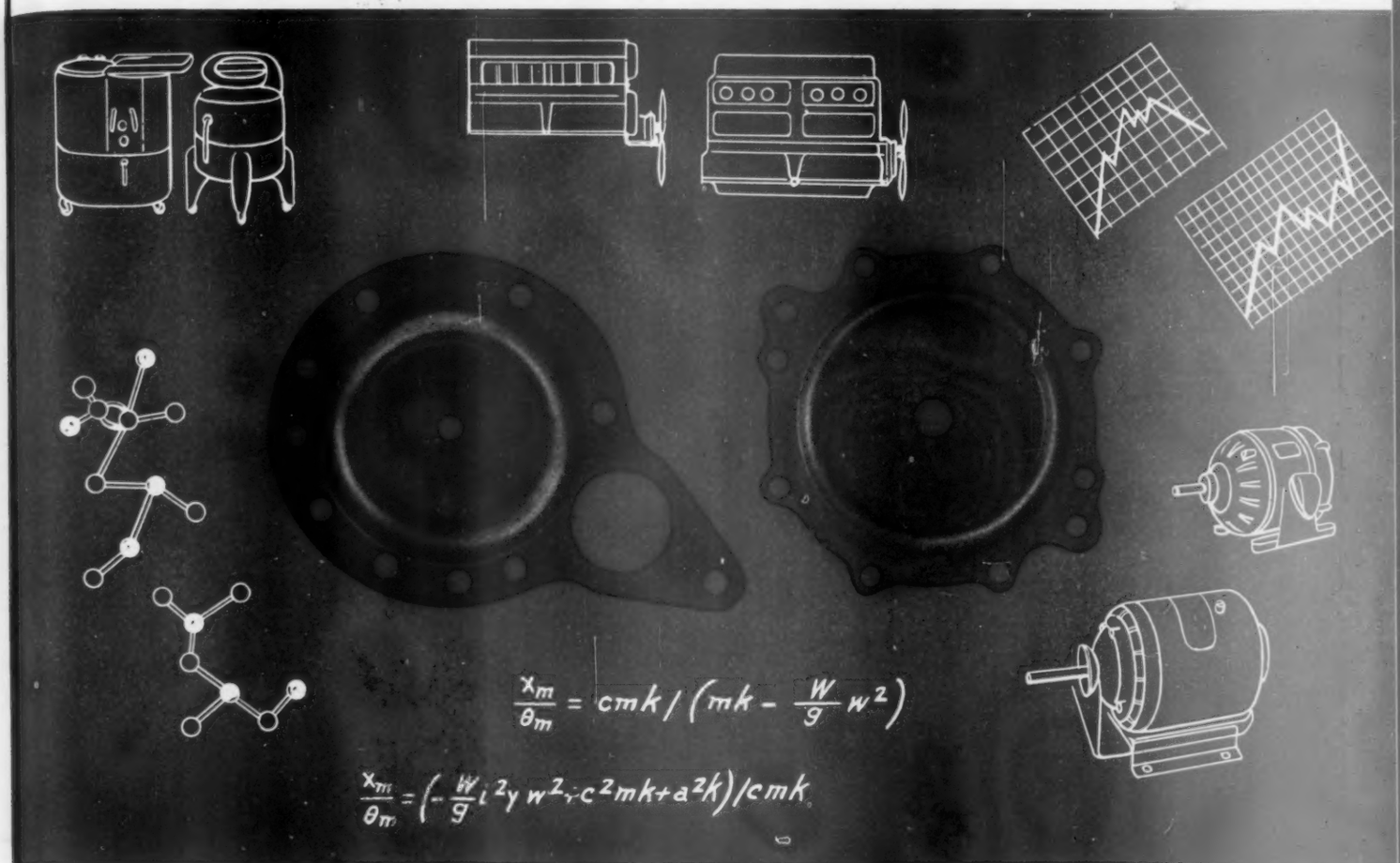

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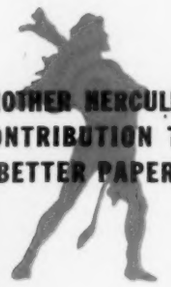

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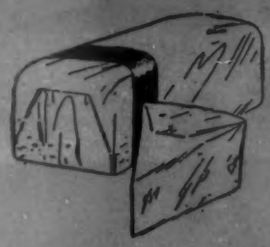

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Cushioned power—that's rawhide. Hammers and mallets made from this tough, resilient material deliver the *most* power with the *most* protection. Your fine finishes, your expensive machined parts are much less likely to be damaged when you insist upon rawhide.

C/R coiled rawhide hammer faces may be quickly replaced in the permanent malleable iron heads.

Your Guarantee

Here is why the best in rawhide is Chicago *Rawhide: C/R's ultra-careful hide selection . . . special seasoning and manufacturing processes . . . 58 years' experience in working rawhide . . . top quality standards.*

CHICAGO Rawhide MFG. CO.

1203 ELSTON AVE. • CHICAGO 22, ILLINOIS

ENCIRCLEMENT OR RUSSIA CALIFORNIA MEETING

Guest speaker at the April 18th dinner-meeting of the California Purchasing Agents' Association, held at the Hotel Leamington, Oakland, was Dr. Lynn T. White, Jr., president of Mills College. His subject was "American Encirclement of Russia."

ELECTRONICS AT WORK TULSA, OKLA.

R. T. Fryer, consulting and application engineer, Westinghouse Electric Corp., Houston, Tex., spoke on "Electronics — Basic Functions and Practical Applications" at the April 9th meeting of the Purchasing Agents Association of Tulsa, Okla. His talk was supplemented by showing of the film "Electronics at Work."

MOTOR RACE STARTER SPEAKS AT INDIANAPOLIS

Seth Klein, vice president of Marmon-Harrington, Inc., and for the past 22 years official starter of the 500 Memorial Day automobile race, Indianapolis, Ind., recited his experiences as starter at the April 16th meeting of the Purchasing Agents Association of Indianapolis, at the Columbia Club. His talk was accompanied by motion pictures of the 1939 and 1940 races.

PURCHASE-DAY DELIVERY PLAN ANNOUNCED BY W. A. A.

A system by which purchasers of surplus, fixed-price capital and producer goods may take delivery on the same day as their purchase is being put into effect in all regions of the War Assets Administration.

Designed to eliminate the time lag between the purchase and delivery, the new system is based on an inventory and sales record form, a copy of which is attached to the item for sale. The purchaser signs the form which, in conjunction with a shipping and billing form, permits immediate delivery.

Formerly, purchasers had to wait for a sales agreement form to be prepared and submitted after they had bought an item.

Outlining the new procedure in a letter to regional directors, Frank R. C. Creedon, director of capital and producer goods disposal, said: ". . . the only delay in delivery would be the actual time consumed in skidding and crating the purchase." He said that the system had been tried out in several regional offices and had worked more effectively than any other plan in expediting the delivery of equipment after purchase.

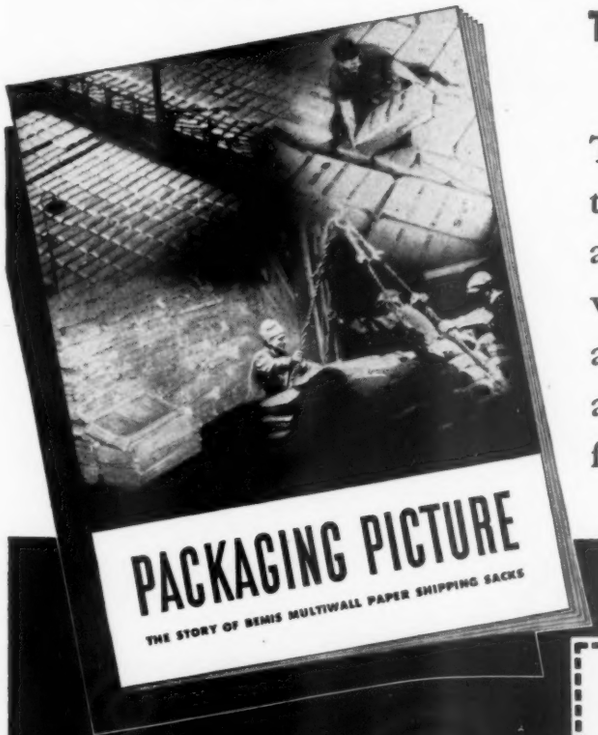
It is planned to use the form on all declared and undeclared items covered by the Clayton Formula and those items where a fixed price can be established. The Clayton Formula provides for fixed prices on certain capital and producers goods based on their length of use.

New! Complete! Concise!

THE BEMIS BOOK ON MULTIWALL PAPER SHIPPING SACKS TELLS HOW YOU CAN GET...

1. Better, low-cost packaging
2. Safer, surer shipping protection
3. More efficient packing operations
4. Faster, more economical handling
5. Finer, more legible brand printing

Send for "PACKAGING PICTURE"



The Story of BEMIS Multiwall Paper Shipping Sacks

This new 16-page book—largely pictorial—shows how Bemis Multiwalls are made . . . how you can use these versatile shipping containers most advantageously . . . how Bemis Packaging specialists can help you. You'll find it interesting as well as beneficial.

Your copy is ready for you Today

BEMIS BRO. BAG CO.

Peoria, Ill. • East Pepperell, Mass. • Mobile, Ala. San Francisco, Calif. • St. Helens, Ore. • Wilmington, Calif.

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte Chicago • Denver • Detroit • Houston • Indianapolis • Kansas City Los Angeles • Louisville • Memphis Minneapolis • New Orleans • New York City • Norfolk Oklahoma City Omaha • Orlando St. Louis • Salina Salt Lake City • Seattle Wichita

Bemis Bro. Bag Co.
111-U N. Fourth St., St. Louis 2, Mo.
Please forward my copy of "PACKAGING PICTURE."

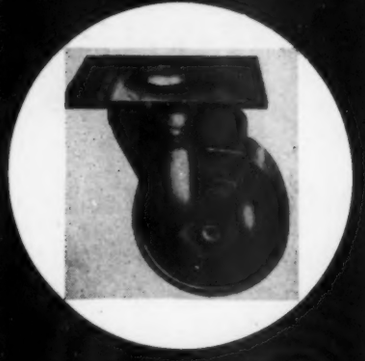
*Name*_____

*Firm*_____

*Product*_____

*Street*_____

*City*_____ *State*_____

DARNELL
A SAVING AT EVERY TURN
CASTERS
A SAVING AT EVERY TURN

DARNELL CORP. LTD
LONG BEACH 4, CALIFORNIA
60 WALKER ST., NEW YORK 13, N Y
36 N. CLINTON, CHICAGO 6, ILL

WAA DISPOSES OF SOUTHWEST EMERGENCY PIPE LINE

The Southwest Emergency Pipe Line, one of six government-owned pipe lines, has been disposed of on a combination sale and lease basis the War Assets Administration announces. The 167-mile line, which extends from Refugio to Houston, Texas, operated during the war as a link in an emergency feeder system for the Big Inch Pipe Line from Texas to New York.

The successful proposal was submitted by Southwestern Independent Gas Pipe Line Company, a new affiliate in the Houston Industrial Gas System, an independent group serving both industrial plants in the Houston area and the Magnolia Park section of the city itself.

Fixed obligations in the disposal agreement consist of a purchase price of $400,000 for the northern portion of the line, $58,000 for the unneeded facilities, and a rental of $25,000 per year for lease of one-half of the capacity of the southern portion. Contingent obligations call for the payment of one-half cent per thousand cubic feet for additional gas delivered from the southern portion to the northern portion and two cents per thousand cubic feet for gas sold locally from the southern portion.

The purchaser-lessee has an option to acquire the leased portion of the property.

CHASE OFFICIAL FORESEES CONTINUED BURLAP SHORTAGE

Indian political unrest, labor difficulties, a food shortage and a thriving black market all will hinder burlap supplies in 1946, according to Ferdinand H. Rhoden, head of burlap purchases for Chase Bag Company. Mr. Rhoden arrived in Boston April 11th, on the *SS Exporter* from Calcutta, where he spent 60 days in the interest of Chase's buying operations.

Mr. Rhoden reports that it is doubtful if burlap importations can be expected to eliminate the current textile bag shortage in this country. The acreage to be licensed by the Indian Government has been reduced by 25% compared to last year in favor of rice and other food grains which are critically needed. Nevertheless, the prospects for the jute crop are fair, and given good weather it is hoped that the out-turn will not be much less than the current crop. The likelihood of a short crop, together with labor and political disturbances, means that increased production of the mills is out of the question. Maintenance of present schedules will be about the best that can be expected.

Although the India Jute Mills Association is taking steps to smash it, the black market is highly active in burlap at the present time, and it is feared that a considerable yardage is moving underground. The political situation, according to Mr. Rhoden, is not very comforting. Anything can happen, and he expects to see India in the headlines often before this year is over.

BEMIS BROS. BAG CO. BUYS INDIANA COTTON MILLS

Bemis Bro. Bag Company of St. Louis, Mo., has acquired the property of the Indiana Cotton Mills at Cannelton, Indiana. A new company is being organized to operate the plant. Though Lee Rodman, president is retiring from active management, the new company expects to retain present personnel.

VAN NORMAN COMPANY ACQUIRES MORSE TWIST DRILL

Announcement is made by President James Y. Scott of the Van Norman Company, Springfield, Mass., of the acquisition of the Morse Twist Drill & Machine Co. of New Bedford, Mass. The latter will be operated as a sepa-

James A. Wright

rate corporation and will remain in New Bedford. Officers of the new management are as follows: James Y. Scott, president; James A. Wright. Vice President and general manager; E. C. Adams, vice president and assistant general manager; M. J. Rainey, general sales manager; L. H. Stanton, treasurer. Mr. Wright will have active charge of the operations of the Morse organization.

SYNTHETIC RUBBER NEAR TO PRICE PARITY WITH NATURAL

Commenting on progress made in bringing synthetic rubber near tot price and performance parity with natural rubber, John L. Collyer, president of the B. F. Goodrich Company, said that, with the elimination of some high-cost butadiene production after V-J Day, the average actual cost of GR-S had been reduced to "less than its established selling price of 18½ cents a pound." He added that, on a large-production basis, America can produce that rubber at a "plant cost" of 12 cents a pound. This is without allowance for amortization, depreciation, selling expense and return on invested capital, he said, but "even if such production were to be carried on by private enterprise there would be added to this 12 cent cost only three to five cents more per pound to cover such charges—or an all-in price of 15 to 17 cents."

In performance, likewise, synthetic rubber has made great strides, he reported, citing not only various non-tire products which excel their natural-rub-

(*Continued on page* 256)

Information

FOR ELECTROPLATERS AND METAL FINISHERS

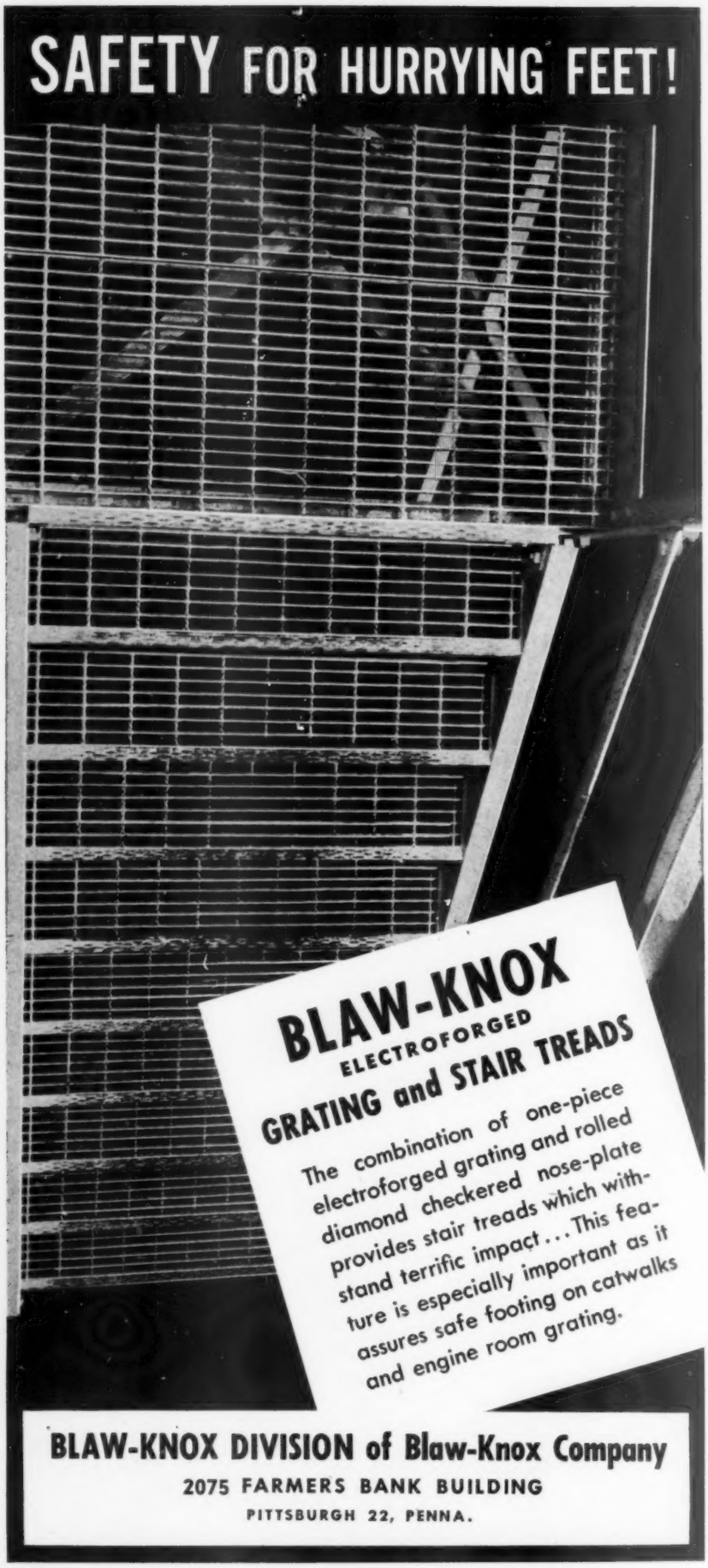
Udylite has made an intensive study of electroplating and allied arts. The work of its Research and Development Division is a well-organized, full-time operation.

In the last 27 years Udylite engineers and electrochemists have encountered a wide range of problems and uncovered a vast amount of valuable information.

Udylite equipment has been built on this foundation. A few of the available descriptive bulletins are shown here.

If you would like to have any of these bulletins, tell us which ones. If none seems to bear on your individual problem, tell us what it is. Our engineers will have some information that may save you a lot of time and effort.

THE *Udylite* CORPORATION
1651 EAST GRAND BOULEVARD
DETROIT 11, MICHIGAN
REPRESENTATIVES IN ALL PRINCIPAL CITIES


SAFETY FOR HURRYING FEET!
BLAW-KNOX
ELECTROFORGED
GRATING and STAIR TREADS
The combination of one-piece electroforged grating and rolled diamond checkered nose-plate provides stair treads which withstand terrific impact... This feature is especially important as it assures safe footing on catwalks and engine room grating.
BLAW-KNOX DIVISION of Blaw-Knox Company
2075 FARMERS BANK BUILDING
PITTSBURGH 22, PENNA.

(*Continued from page* 254)

ber counterparts, but also his company's first postwar passenger-car tires "which, by all known tests, outwear tires of natural rubber." He explained that synthetic rubber is not yet the all-round equal of natural rubber in some products, notably large tires for trucks and buses, and that new ideas in design were largely responsible for the new passenger-car tire's superior performance.

HARDWARE CLOTH COMMERCIAL STANDARD

Hardware Cloth Commercial Standard CS 132-46, effective April 15 is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C. Printed copies will be available in due course.

WOVEN WIRE NETTING COMMERCIAL STANDARD

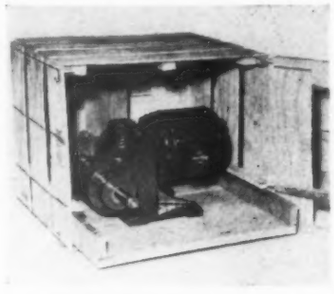
Woven Wire Netting, Commercial Standard 133-46, effective June 1, 1946, is announced by the Division of Trade Standards of the National Bureau of Standards, Washington, D. C. Mimeographed copy, TS-4127, is now available.

COTTON TENTS, TARPAULINS, COVERS — COM. STANDARD

Commercial Standard CS 28-46 covering cotton fabric tents, tarpaulins and covers, effective April 15, is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C. Printed copies will be available in due course.

RETURNABLE WIREBOUND CRATE MAY BE USED 12 TIMES

ILLUSTRATION shows 4-duty, returnable wirebound crate with removable base, made for the Janette Manufacturing Co., Chicago, for the shipment of speed re-

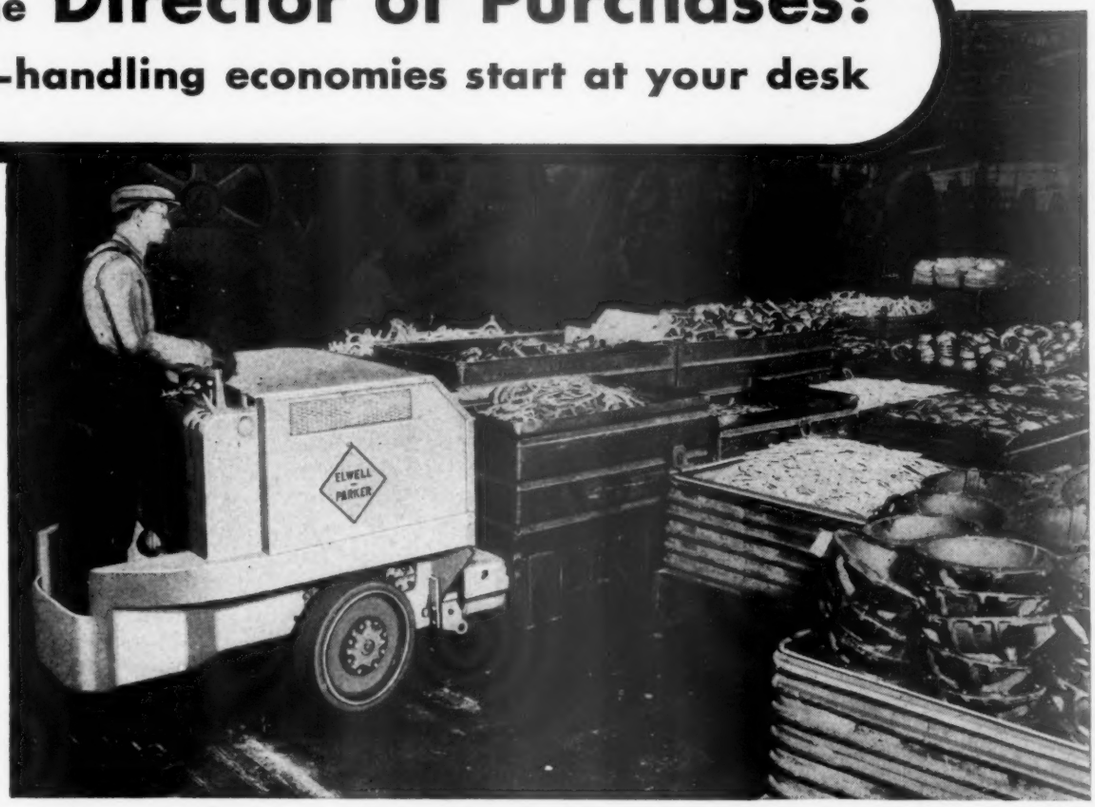


Returnable wirebound crate has removable base.

ducers. It has a removable base, which it is said permits reuse of the crate up to at least a dozen times. The same crate can accommodate four different sizes of speed reducers. Intermediate cleats hold down the sliding base, and prevent product from shifting. Crate is made of 3/16" veneer.

To the Director of Purchases:

Load-handling economies start at your desk



—with *Industrial* LOGISTICS* to aid in reducing your Company's costs of transporting Boxes, Barrels, Bags, Bales

1—When you order—specify delivery in standard unit containers—Boxes, Barrels, Bags or Bales, assembled in space-saving, time-saving, money-saving Master Unit Loads on Pallets or Skids.

Immediately they reach your Plant, transport them on Elwell-Parker Electric Trucks, *keeping* loads on Pallets or Skids.

2—You aid your Plant Superintendent by enabling him to move raw and finished materials into storage faster — more safely — more economically — with fewer waste motions, with reduced damage.

3—You aid your Sales Manager by enabling him to palletize his outgoing shipments—giving your customers also the savings *you* realize when you *buy* on Pallets—plus an added inducement to buy from your Company.

4—Better suggest your Management call in the Elwell-Parker Materials-Handling Advisor for consultation. He will lead a competent survey to reduce costs by eliminating wastes—will recommend an adequate *System* of Elwell-Parker Trucks, Tractors and Cranes to handle your loads in every department.

His experience is based on Elwell-Parker's success in serving more than 300 branches of Peacetime Industry.

The Elwell-Parker Electric Company, 4519 St. Clair Avenue, Cleveland 14, Ohio.

Dial The EP Materials-Handling Consultant Today!

Albany	2-4095	Denver	KE 5500
Birmingham	3-3323	Detroit	MA 2233
Boston	COM 5522	Ft. Worth	4-6184
Buffalo	GR 7664	Greenville	534
Charlotte	5026	Jacksonville	5-1384
Chicago	SUP 7420	Kansas City	VA 7021
Cincinnati	MA 0650	Los Angeles	PR 5911
Cleveland	MA 8915	Memphis	8-1648
Columbus	AD 4824	Milwaukee	MA 7817
		Minneapolis	GE 3247
		Montreal	HA 7191
		New York	COR 7-0797
		New Orleans	MA 6316-C
		Philadelphia	RIT 7246
		Pittsburgh	AT 6734
		Richmond	27977
		St. Louis	LA 4545
		San Antonio	TR 3653
		San Francisco	GA 1827
		Seattle	EL 5722
		Stratford, Conn.	BR7-1554
		Syracuse	2-9596
		Toronto	WA 1478
		Vancouver	MA 2571
		York, Pa.	4-5430

* The science of assembling and handling materials to insure maximum economies at every stage of (a) Procurement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes;

Employing the correct containers (Boxes, Barrels, Bags or Bales) in Master Unit Loads, on Pallets or Skids;

To insure Greater Speed — Faster Production — Greater Turnover —Increased Safety—New Profits.

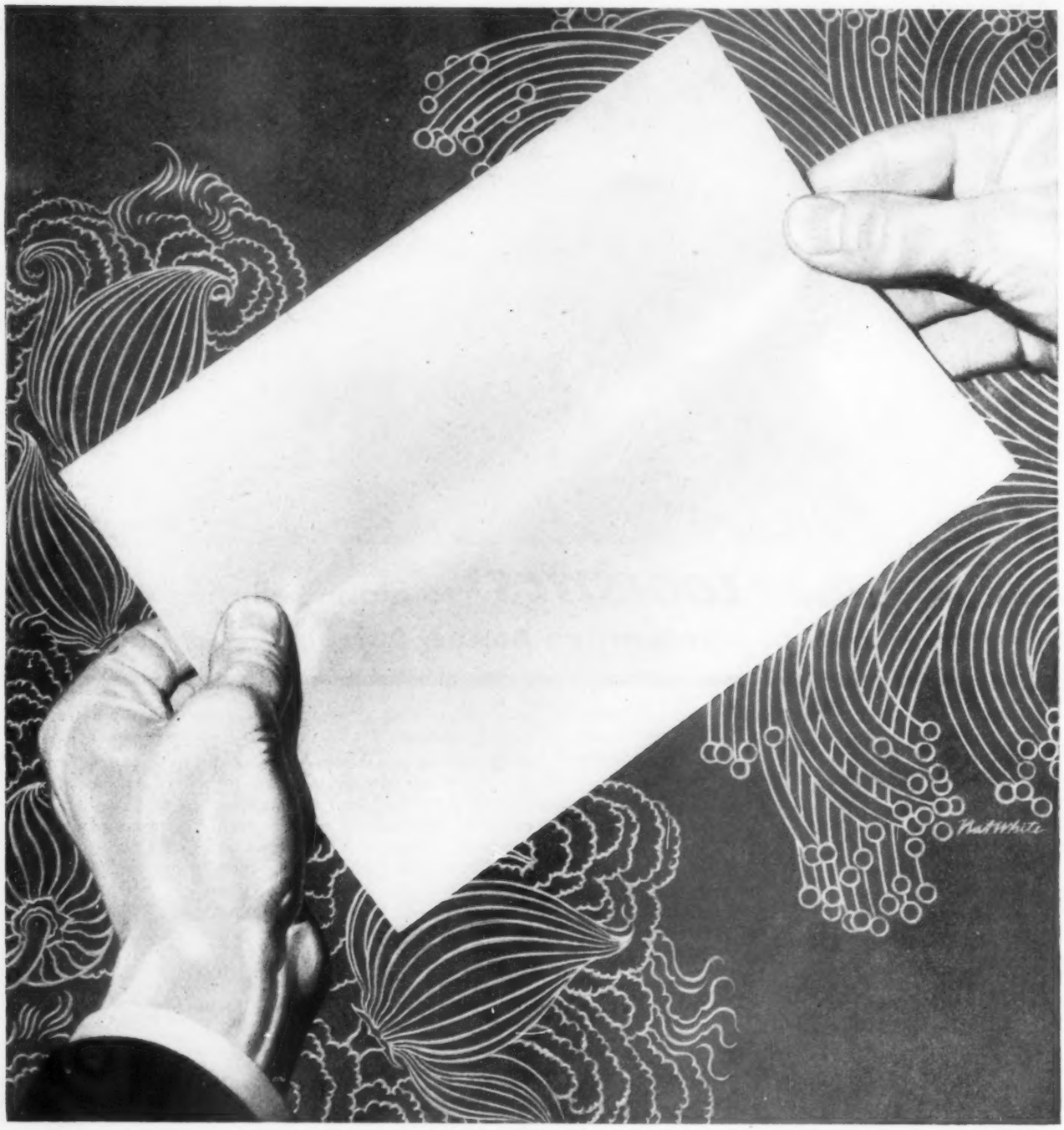
ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

Crane's Papers afford you both durability and distinction

These two highly desirable qualities are yours to enjoy and profit by in the use of Crane's Papers for your letters, forms, reports, and all manner of daily transactions. For Crane's Papers are made only from



cotton and linen fibres—the most enduring materials from which paper can be made—by men of skill in mills where fine papers have been continuously made for 145 years. Today's written word is tomorrow's reference and Crane's gives assurance to what you say...makes it a matter of record for the future.

CRANE'S FINE PAPERS

MADE IN DALTON, MASSACHUSETTS SINCE 1801

PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

Some Different forms, Including Purchase Requisition Change Order, and Also "Amendment" to Purchase Order

PURCHASING Agent W. P. Kennedy of the Tampa Shipbuilding Company, Tampa, Florida, supplied for use in the Forms Forum, the immediately accompanying variety of forms which are used by his department. They are materially different from forms previously submitted in the Forum, and you may find of especial interest the Purchase Requisition, the Purchase Requisition Change Order, and the Amendment or change-order which is sent to vendors. Mr. Kennedy also furnished the following explanation of the use of forms:

"Stores Requisition: This form is used by us to obtain office supplies from General Stores. It is used by all other departments in the yard for the same purpose and is the only means of getting material for yard maintenance and construction work. (See page 262).

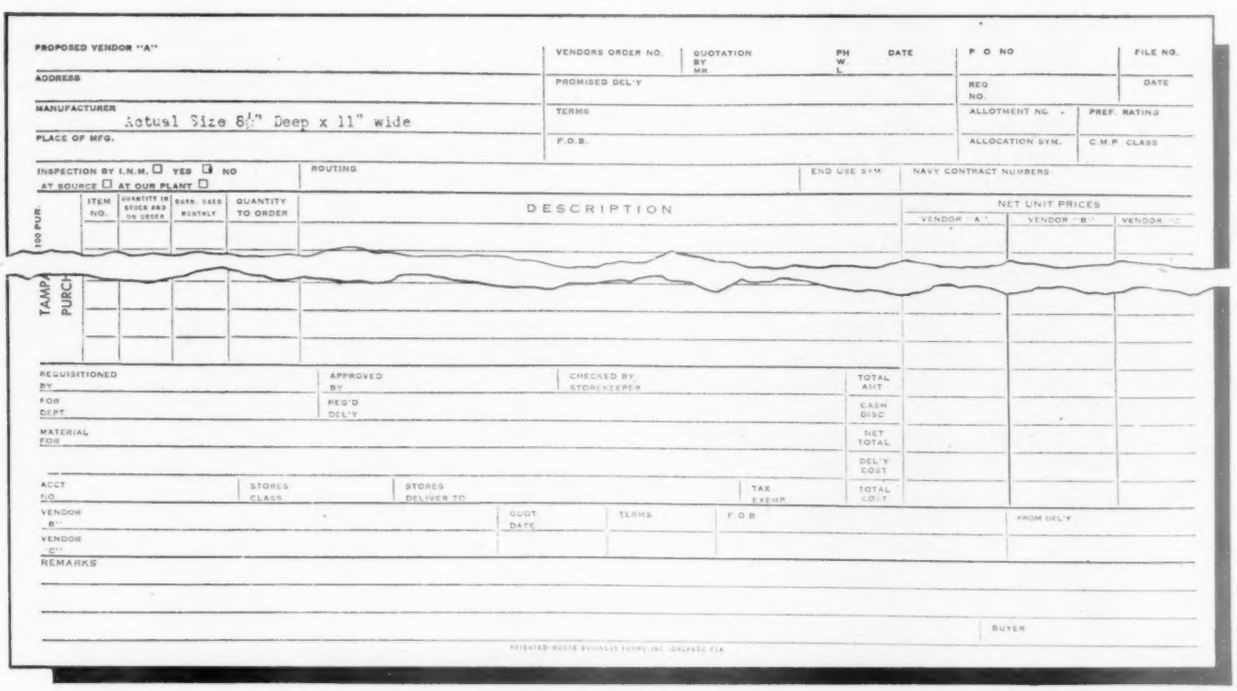
"Purchase Requisition:—This is our Purchase Requisition. Each requisition is numbered consecutively with an "R" prefix to avoid confusing with purchase order numbers. There are six copies on various colored sheets, all with carbon interleaved and marked for different departments.

"This form originates in one of the varied departments requiring material which is not carried in General Stores stock, mainly in our Ordering and Scheduling Division (for construction materials) and in the General Stores Division (stock materials).

"When it reaches Purchasing, the material to be purchased, charge information, approval, and delivery instructions are indicated thereon. Only two copies reach Purchasing, the original for our use and files, and the second copy, which is sent to the Navy office after the purchase order has been typed. This Navy copy is complete with all the information put on by Purchasing.

"There is provision for three bids on this form, the successful vendor being indicated at the top with other information concerning the bid which has been

(*Continued on page 262*)


PROPOSED VENDOR "A"
VENDORS ORDER NO.
QUOTATION BY MR.
PH W. L.
DATE
P. O. NO
FILE NO.
ADDRESS
PROMISED DEL'Y
REQ NO.
DATE
MANUFACTURER
Actual Size 8½" Deep x 11" wide
TERMS
ALLOTMENT NO.
PREF. RATING
PLACE OF MFG.
F.O.B.
ALLOCATION SYM.
C.M.P. CLASS
INSPECTION BY I.N.M. ☐ YES ☐ NO
AT SOURCE ☐ AT OUR PLANT ☐
ROUTING
END USE SYM.
NAVY CONTRACT NUMBERS
ITEM NO.
QUANTITY IN STOCK AND ON ORDER
QUAN. USED MONTHLY
QUANTITY TO ORDER
DESCRIPTION
NET UNIT PRICES
VENDOR "A"
VENDOR "B"
VENDOR "C"
TAMPA PURCH
REQUISITIONED BY
APPROVED BY
CHECKED BY STOREKEEPER
TOTAL AMT
FOR DEPT
REQ'D DEL'Y
CASH DISC
MATERIAL FOR
NET TOTAL
DEL'Y COST
ACCT NO.
STORES CLASS
STORES DELIVER TO
TAX EXEMP
TOTAL COST
VENDOR "B"
QUOT. DATE
TERMS
F.O.B.
FROM DEL'Y
VENDOR "C"
REMARKS
BUYER

Tampa Shipbuilding Company's Purchase Requisition — See text

Did THIS Ever Happen to YOU?
Dear Sir:
It's YOUR time that's wasted on erasures and re-
typing. It's YOUR money that's wasted on spoiled letter-
heads and carbon smudged second sheets.
Erasure smudg s
You can
eliminate slip-she
of paper that
typists use as sra
et to remove,
with resulting "blanking out" — LIKE THIS — of part of
the carbon copy.
Smudge resisting Pinnacle Carbon Paper abolishes
these typing hazards for you. Erasures made with average
pressure on the original will not smudge carbon copies!
No slip-sheets or makeshift paper erasure shields are re-
quired. Pinnacle carbon copies are sparkling clear and
fresh. It's the hard, even, smudge resisting surface of
Pinnacle Carbon Paper that gives you these superb copies!
Why not try PINNACLE CARBON PAPER NOW — and
observe its perfect record results.
COLUMBIA RIBBON & CARBON MFG. CO., INC.
THIS IS THE ERROR CAUSING SLIP-SHEET AND BLANKED OUT TYPING
ges can be eliminated.
eting — or the odd pieces
sure shields and then forg
PINNACLE ribbon

Perfect performance companions to Pinnacle Carbon Paper are PINNACLE TYPEWRITER RIBBONS. Their clear, prestige building, executive type correspondence "sells" your firm at a glance. Ask your regular office equipment dealer or the Columbia Office nearest you for prices and a demonstration of Pinnacle Ribbons and Carbons. Find out how you can have quality typing and save money.

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Main Office & Factory: **Glen Cove, L. I., N. Y.**

New York Sales & Export: 58-64 West 40th St., Midwest Sales: Kansas City, Mo., Dwight Bldg. • Chicago • Detroit • Milwaukee • Minneapolis • Nashville Philadelphia • Pittsburgh • Portland, Oregon • Cincinnati (Harris-Moers Co.) Atlanta. *Also:* London, England • Sydney, Australia.

PINNACLE

THE SMUDGE-RESISTING CARBON PAPER THAT NEEDS NO ERASURE SHIELDING

RAYMOND J. KOCH MADE DIRECTOR OF UARCO

The election of Raymond J. Koch to the board of directors of UARCO Incorporated, Chicago, manufacturers of continuous business forms, was recently announced by W. R. Barker, president of the firm.

Mr. Koch is president of the Felt & Tarrant Manufacturing Company of Chicago, trustee of the Armour Research Foundation and the Illinois Institute of Technology, and vice-president of the Illinois Manufacturers' Association.

MORSE RETURNS TO ROYAL AS PORTABLE REPRESENTATIVE

Wesley H. Beckwith, portable sales manager, Royal Typewriter Company, announces that Edison S. Morse has returned to Royal as portable representative for the Ohio territory with headquarters at Cleveland.

Edison S. Morse

Recently returned from the Pacific, Morse held the rank of major upon his discharge from the Army. Prior to entering the service, he established an excellent record as Portable Representative for the Buffalo territory.

PACKAGING PICTURE—STORY OF MULTIWALL PAPER SACKS

To those concerned with packaging and shipping, a new book recently issued by Bemis Bros. Bag Co. entitled "Packaging Picture—The Story of Bemis Multiwall Paper Shipping Sacks" will be of interest. This sixteen-page book is profusely illustrated, the story being told almost entirely by pictures, with very brief text. The treatment is modeled somewhat after the style of *Life* Magazine.

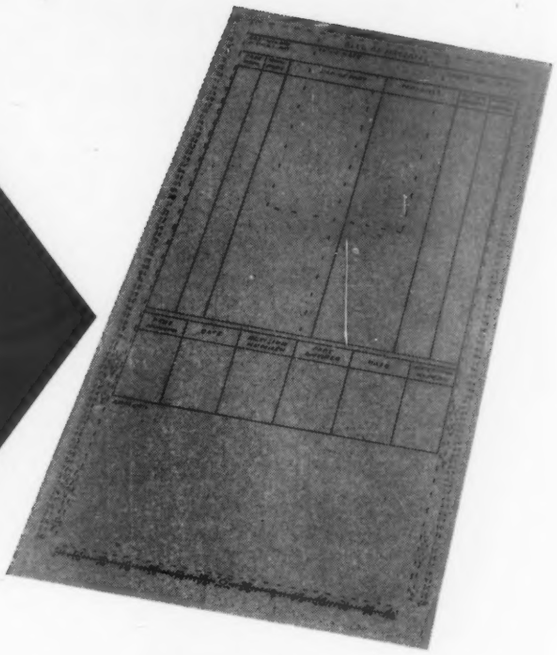
The book tells how Bemis multiwall bags are made, how quality is controlled and how brands are designed, and about the Bemis Specialists, who are available for advice and assistance.

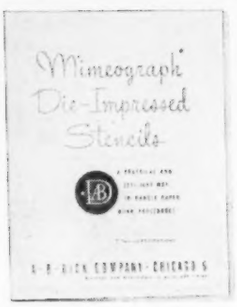
Bemis also has research and testing laboratories, where new types of bags

(*Continued on page* 264)

THE NEW METHOD OF EXPEDITING PAPER WORK PROCEDURES

...Mimeograph stubless die-impressed stencils





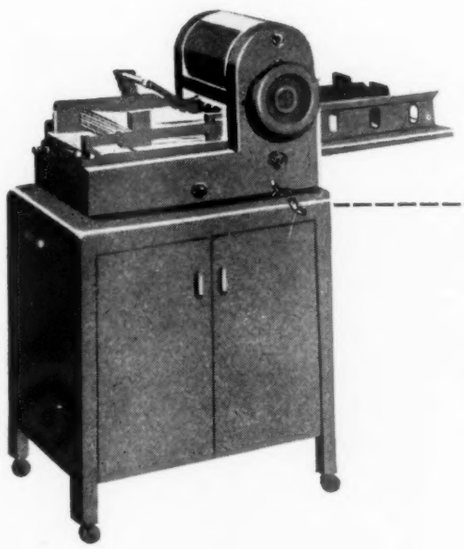
Send for this new folder on a tool which will give you faster production, simpler control of factory paper work, systems, routines, and methods this low-cost way!

Do you know why so many factory superintendents, methods managers, systems men are ordering Mimeograph die-impressed stencils today?

The reason is: this new, versatile, low-cost improvement in stencil duplication eases the burden of factory paper work. The new folder shown here tells how Mimeograph die-impressed stencils

- . . . make paper work systems one-writing systems
- . . . eliminate the wastefulness of obsolescent forms
- . . . increase accuracy and speed production—only one proofreading required in a single-writing system
- . . . turn out as many clear, black-and-white copies as you want, when you want them—and they won't fade even under exposure or smudge under hard shop handling.

If you haven't heard the whole story on this new, advantageous use for your Mimeograph duplicator, clip and mail the coupon today.



Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office

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A. B. DICK COMPANY, Dept. P-646
720 West Jackson Boulevard
Chicago 6, Illinois

Send me a copy of your new folder, "Mimeograph Die-Impressed Stencils."

NAME.....

COMPANY.....

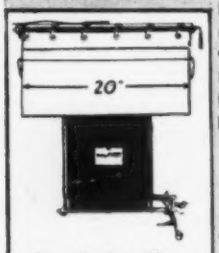
STREET.....

CITY.....STATE.....

No Typing Delays with Copy-RIGHT (front-vision, line-by-line) COPYHOLDER

SAVES — EYES . . EFFORT . . ERRORS AND UP TO 50% IN TYPING TIME!

To read slant-wise from a side position, as most typists do, is basically wrong, tedious and harmful. By permitting correct posture, automatic line-pointing, forward EYE LEVEL reading, Copy-RIGHT shortens reading distance, improves visibility, assures greater accuracy, eliminates eyestrain. Result: typewritten matter that carries quality, neatness, prestige.



Six Model Sizes hold papers up to 12", 16", 20", 25", 30", 36" wide

No Twist, No Turn No Squint, No Squirm

Copy-RIGHT keeps Typists fresh and alert throughout the day, slashes typing costs. Self-supporting, not permanently attached, can be instantly moved from one typewriter or desk to another.

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MAIL COUPON NOW!

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☐ Send illustrated literature please.
☐ I'd like to try a Copy-RIGHT in my office

Name _____

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(Attach Letter Head Please)

The First Step to Improve Office Efficiency!

(Forms Forum Continued from page 259)

TAMPA SHIPBUILDING COMPANY, INCORPORATED
TAMPA, FLORIDA DATE _____

REQUEST FOR QUOTATION

☞THIS IS NOT AN ORDER☜ REPLY IN TRIPLICATE

Size 8½" x 11" REFERRING TO _____

To _____

ADDRESS _____

QUANTITY	MATERIAL REQUIRED FOR NATIONAL DEFENSE WORK COVERED BY U.S. NAVY CONTRACT NO. _____ BEARING _____ CMP PRIORITY RATING _____ END USE
	Any quotation to be considered must indicate your best price, terms, delivery promise, weight and f.o.b. point. Material weighing 20,000 lbs. or more must be quoted f.o.b. shipping point with originating carrier indicated as material would move on Gov't B/L. Less than 20,000 lbs. should be quoted f.o.b. our plant, Tampa, Florida. Any exceptions due to established standard practice must be clearly indicated.
	Name and address of manufacturer must be stated for all items. IN ORDER TO RECEIVE CONSIDERATION, BIDS MUST BE RECEIVED BY _____

FORM 100 9TH REV
BEFORE BIDDING SEE INSTRUCTIONS ON REVERSE SIDE.

TAMPA SHIPBUILDING CO., INC.

_____
PURCHASING AGENT

140240

TAMPA SHIPBUILDING COMPANY, Inc.
TAMPA, FLORIDA

STORES REQUISITION

MATERIAL CLASS. _____

DT _____ MS _____ AS _____ DS _____ DC JOB NO. _____

DATE _____ INSPT _____ NOT INSPT _____ STOCK _____ NUMBER _____

ACCOUNT or JOB NO. _____

HULL NO. _____ ORIGIN (DEPT.) _____

PLAN NO. _____ B/M NO. _____ P. R. NO. _____ P. O. NO. _____

MATERIAL TO BE USED FOR Actual Size 9" wide x 5-1/2" deep

QUAN	REQUISITION DESCRIPTION	ITEM NO. OR STOCK	DEL 'V	LOCATION	ISSUED QUAN	ISSUED UNIT	COST PRICE	COST UNIT	AMOUNT	

CROSS REFERENCE _____ FOREMAN _____

accepted. When this form has been completed it goes to the purchase order clerk, who types the order from it.

"Purchase Requisition-Change Order: Frequently after a Purchase Requisition has been issued and the copies distributed to the various departments, a change is required, and this form is used for that purpose. There is a copy for each department receiving a copy of the Purchase Requisition, in corresponding color.

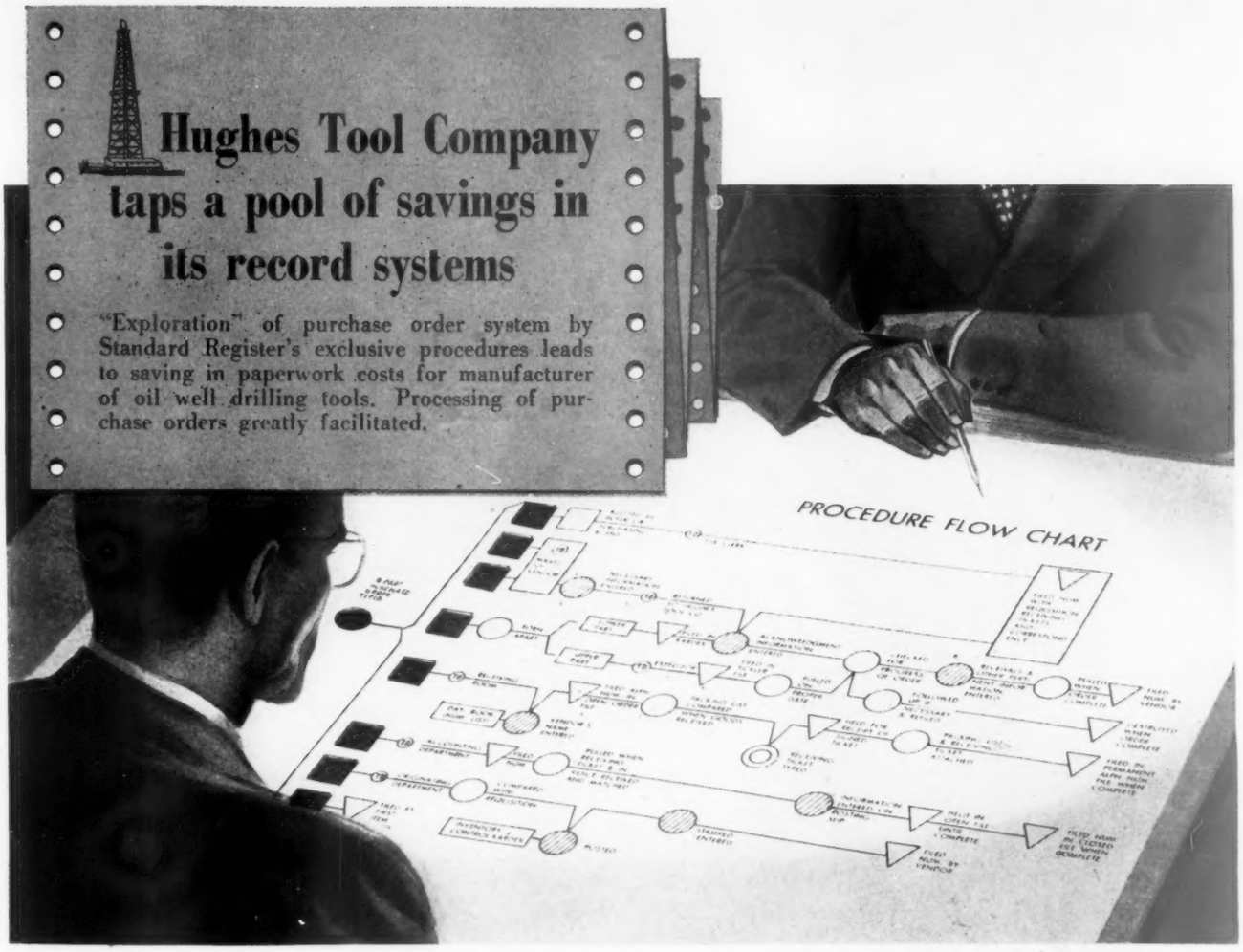
"Only the first three copies reach Purchasing, the others being distributed to various departments, as are copies of the Purchase Requisition. The three copies of the change order are given to the buyer handling the Purchase Requisition. He makes the necessary changes and fills in the part marked "Purchasing Department Action" and the date. The third copy then is returned to the one issuing the change order, and the two remaining copies are retained with the purchase requisition. Eventually the original is filed with the original purchase requisition, and the second copy is sent to the Navy with its copy of the purchase requisition.

"Request for Quotation: This form is self explanatory. It is printed on onion skin to enable as many as ten requests to be typed at once. One copy is sent to each vendor, and one is retained for our files with a list of the vendors to whom it has been sent.

"Purchase Order: This form is self-explanatory. As stated, the order is typed from the completed Purchase Requisition. The original is mailed to the vendor, signature by the Navy having been obtained first if it is required. The master ditto is then run off and the copies distributed to the various departments.

"Amendment: This form is used for

(Forms Forum Continued on page 268)


Hughes Tool Company taps a pool of savings in its record systems
"Exploration" of purchase order system by Standard Register's exclusive procedures leads to saving in paperwork costs for manufacturer of oil well drilling tools. Processing of purchase orders greatly facilitated.
PROCEDURE FLOW CHART

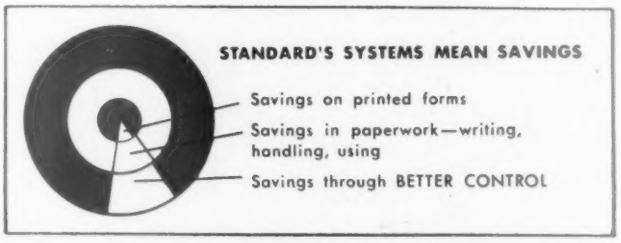
Exclusive! Tested! Standard Register's methods save most where records systems cost most

DON'T CONFUSE what Standard Register offers—with the *usual* office or systems study. Just as scientific geophysical surveys lead drillers to *hidden* oil, so does Standard's scientific approach guide management to savings in their record systems that other methods often overlook.

And these savings go far beyond cost of forms themselves . . . to the writing, handling and using of forms . . . and to improved management *control* . . . where paperwork savings can multiply themselves into five and six figures.

25 POINT STEP-BY-STEP PROCEDURE

Standard uses an exclusive, newly developed procedure, proved during (and since) the war in the offices and plants of many of America's leading companies. Each of 25 separate, pre-tested steps, including analytical flow-charting of existing procedures, makes its own revelation. Cumbersome paperwork procedures, work-making form design, wasteful methods of writing and handling forms are detected—and corrected—in a minimum of time and without upsetting office routine.


STANDARD'S SYSTEMS MEAN SAVINGS
Savings on printed forms
Savings in paperwork—writing, handling, using
Savings through BETTER CONTROL

Would you like additional facts about Standard Register business systems—and the Formcraft-designed Kant-Slip continuous forms that make them operate? Write. Ask a Standard representative to call.

THE STANDARD REGISTER COMPANY

Manufacturers of Record Systems of Control for Business and Industry

406 CAMPBELL STREET, DAYTON 1, OHIO

Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland 6, California. Canada: R. L. Crain Limited, Ottawa. London: W. H. Smith & Son, Ltd.

Business Records are VITAL STATISTICS, too!

Protect *and* Preserve Yours *with* WESTON PAPER *for* RECORDS

The majority of America's priceless public records—vital statistics of life and property—are preserved and protected against damage and deterioration on record paper made by WESTON. Many of your business records are equally indispensable and valuable to you. They deserve similar security and long-term protection.

Make sure all important records, accounts, documents and correspondence which you want to *keep* are kept on WESTON cotton fibre content papers. Made expressly for record keeping, they will give you maximum service and security at what amounts to an insignificant fraction of the value of your records. Make it a company policy to

Keep records worth keeping on WESTON *Papers*

BYRON WESTON COMPANY, DALTON, MASSACHUSETTS

Weston *Makers of Papers for Business Records*

WESTON PAPERS PROTECT YOUR RECORDS

(*Continued from page* 260)

are developed and where tests on bags for packing new products are made. Multiwall bags are used for hundreds of different products and many of these uses are illustrated in the book.

Copies of this book are available from any one of the thirty-three Bemis Bro. Bag Co. offices or from the headquarters office at 408 Pine Street, St. Louis, Missouri.

MADE MANAGER OF DIEBOLD SYSTEMS PRODUCTS DIVISION

Diebold, Incorporated, Canton, Ohio, announces the appointment of L. B. Flaws as Sales Manager of its Systems Products Division. A pioneer, and for many years a manufacturer of safes, chests, vault doors, heavy armor plate, and bank vault equipment, Diebold's line

L. B. Flaws

has been extended by the acquisition of a broad line of products in the field of systems housing and recording, including Cardineer, Safe-T-Stack, Flex-Site, Tra-Dex, Flofilm and other modern office devices.

Mr. Flaws, who will head this division, formerly was assistant to the vice president of International Business Machines, with whom he was associated in various capacities for over 25 years. He attended Armour Institute of Technology, is a veteran of World War I and served as principal industry Advisor in the War Production Board, as a $ a year man, in World War II.

DOEHLER BUYS 16-STORY OFFICE BUILDING

The Doehler Metal Furniture Co., Inc., New York, has purchased the 16 story office building at 192 Lexington Avenue, New York City. The purchase represents a step in the expansion program of the organization, which, for about 18 years, has occupied 2 floors of the building. The firm plans to occupy other floors in the building, probably including the street floor for display purposes. This expansion will also provide for Doehler's executive and sales office, their designing organization, and their promotional set-up, thus bringing all activities under one roof.

The building consists of 90,000 square feet and the property is assessed at $565,000.

(*Continued on page* 266)

"Here's why Swingline speeds production!"

They're 100% ROUND WIRE—that's why SWINGLINE Staples step up production in your office! You see, ROUND WIRE is stronger—gives cleaner penetration. And important! ROUND WIRE requires less strip-adhesive, commonest cause of clogging with ordinary staples. SWINGLINE precision-made Staples are also 100% uniform, machine-counted, accurately aligned—and best for all standard staplers. If plenty of speed is what you need, get SWINGLINE trouble-free staples at your stationer's today!

SPEED PRODUCTS COMPANY, INC.
Long Island City 1 • New York

All SPEED products sold through dealers only

SEE SWINGLINE'S NO. 4 STAPLER, TOO!

Note these features: Triple action! It *pins, tacks* and *staples!* Swing-Back head—greatest improvement in 20 years—exposes wide-open loading channel, permits quick and easy loading.

Swingline
NO. 4 STAPLER AND STAPLES
WORLD'S SPEEDIEST STAPLING TEAM

VUL-COT WASTE BASKETS
TRADE MARK REG. U. S. PAT. OFF.

ATTRACTIVE · DURABLE

5 year guarantee

With VUL-COTS you cut maintenance costs and save money on waste handling. Light in weight and unusually strong, they do not split, splinter, dent, crack, rust or corrode. Won't mar floors or furniture. Easily, noiselessly handled.

"Space-saver" model illustrated fits snugly into corners—gives *maximum* waste storage in *minimum* space.

NATIONAL VULCANIZED FIBRE CO.
WILMINGTON 99 DELAWARE

NEW OASIS WATER COOLER

New model Oasis electric water cooler, Model OP-10, a hermetically sealed unit with air-cooled condenser, is announced by the Ebco Manufacturing Co., Columbus, Ohio. The new unit is 43½" high, 15¼" wide x 15½". The capacity of the cooler is 10 gallons per hour; storage 5 quarts. Electrical requirements are as follows: 110 volts, 50-60 cycle, single phase, alternating current only. The cabinet is made of heavy-gauge, galvanized and bonderized steel, with removable front panel for access to condensing unit, control and relay.

New streamlined electric water cooler — Model OP-10

PERMANENT DYE MAKES VAPO PRINTS SUNPROOF

LD SOL NEVER HAS A CHANCE

AMMONIA DEVELOPED
- Blue
- Red
- Black or
- Brown (transparent)

The Frederick Post Company
3650 AVONDALE AVENUE, CHICAGO 18, ILLINOIS

EASTMAN ANNOUNCES THREE NEW INDUSTRIAL PHOTOGRAPHIC PAPERS

Three new industrial photographic papers which will speed the production of paper positives from engineering drawings and enable extra-high quality blueprints to be produced, have just been announced by the Eastman Kodak Company.

Known as Reflex Copy TXA, Linagraph Ortho TXA, and Linagraph Blue Sensitive TXA, the new papers are translucent, extra light weight, and have a very high wet and dry strength. As a result, they can be used very successfully for filing purposes, or binding into a book of drawings or printed matter.

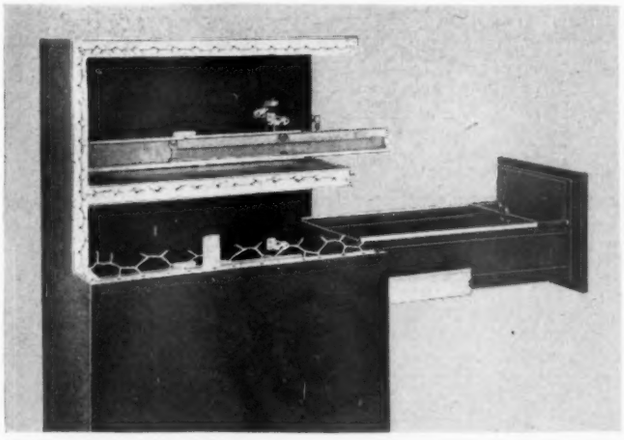
Because of their extra light weight base, and high degree of translucence, these papers may be used in place of film negatives where rapid printing time in making subsequent positives is necessary. They can also be used in any branch of industrial copy work where prints of minimum weight and thickness are important.

Reflex Copy Grade TXA Paper will be supplied in the same sizes and at the same prices as Reflex Copy Grade A and Grade XA Papers. Linagraph Ortho Grade TXA and Linagraph Blue Sensitive Grade TXA Papers will be supplied in the same sizes and at the same prices as Linagraph Ortho Grade A and Grade XA Papers which are now manufactured by Kodak.

Kardex Visible Record Control Systems provide new efficiency in every department, assuring maximum speed of posting and reference!

Modern filing equipment and systems make faster finding of records when wanted. Use the new *Aristocrat* steel files in Grey-Rite finish!

COORDINATE Records and Equipment and win praise from all Departments!



Certified Fire Protection safeguards vital records of every kind. Safe-Files, Safe-Ledger Trays and Safe-Cabinets are again available.

3
2
1
The new TRI-LOCK — Compression plus Flat-Opening!
1. Compression . . . with pages secure as in a bound book!
2. Flat-Reference . . . at a flip of the finger the binder expands!
3. Easy sheet changes . . . with no fumbling. Just slide the button!

New loose leaf binders in compression, prong and ring styles have been developed for greater convenience, long wear and economy.

Many purchasing officials are implementing programs that envision long-range economies by ordering record systems and equipment that are *coordinated* for maximum operating efficiency.

Improved record control and reference systems of many types developed to speed war production can now be applied advantageously to increase peacetime efficiency. Our complete line of the finest and most modern office equipment features many advances in performance, structural strength and appearance.

A staff of Systems Technicians is available in all principal cities to cooperate with management officials in coordinating improved methods and equipment. They can help you institute a study—department by department — with a view to helping your entire organization get its work done with less effort, at less cost. Call on them at any time.

"Purchasing Department – Records and Routines" is a practical 64-page manual, helpful in improving operating procedures. Free from nearest Branch Office or write us in New York.

SYSTEMS DIVISION **Remington Rand** 315 Fourth Avenue, New York 10, N. Y.

COPYRIGHT 1946, REMINGTON RAND INC.

COMMERCIAL FORMS AND SYSTEMS

An ally of modern management, Reynolds and Reynolds *is* one of the world's largest suppliers of printed or lithographed control and operational forms.

- CARBON INTERLEAVED SYSTEMS
- BUSINESS MACHINE FORMS
- PAYROLL CHECKS and SYSTEMS

Effective Advertising Literature, Distinctive Stationery and Business Forms of every kind

The REYNOLDS & REYNOLDS

COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN MANY PRINCIPAL CITIES

(*Forms Forum Continued from page* 262)

WAR ORDER

MATERIAL COVERED BY THIS ORDER IS FOR U. S. NAVY SHIP CONSTRUCTION, CONVERSION OR REPAIR UNDER THE COGNIZANCE OF THE BUREAU OF SHIPS.

PURCHASE ORDER
TAMPA SHIPBUILDING COMPANY, INC.
TAMPA 1, FLORIDA

DATE
REQ. NO.

Above Order and Req. No. must appear on all Correspondence, Invoices, B/L, Cases, Bundles, Packing Lists, and Documents.

TO: Overall Length with Acknowledgment Section 14" x 8-1/2" wide

VENDOR'S ORDER NO.
MFG. ORDER NO.
TERMS

MANUFACTURER
PLACE OF MFG.

F.O.B.

INSPECTION

ROUTING

Please ship the following material, as specified herein, subject to all conditions written herein and appendix "A" hereto attached and forming a part of this purchase order. Invoices are to be rendered in accordance with the applicable portions of appendix "A" hereto attached.

PRIORITY The undersigned purchaser certifies, subject to the penalties of section 35(A) of the United States Criminal Code, to the Seller and to the War Production Board, that to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the item(s) ordered for the purpose for which ordered, and to use any preference rating or allotment number or symbol which the undersigned has placed on this order.

ALLOTMENT NO.
ALLOCATION SYMBOL
END USE SYMBOL

PREFERENCE RATING
CMP CLASSIFICATION
NAVY CONTRACT NO.

ITEM	QUANTITY	DESCRIPTION	PRICE

If you issue your order to secure the above material for us, our name, purchase order number, allotment number and symbol, preference rating and end use MUST appear on your purchase order.

BY _____ PURCHASING AGENT

ONE COPY OF ITEMIZED SHIPPING MANIFEST MUST ACCOMPANY EACH SHIPMENT.

(DETACH HERE)

THIS IS TO BE FILLED IN AND RETURNED

TAMPA SHIPBUILDING COMPANY, INC.
PURCHASING DEPARTMENT
TAMPA 1, FLORIDA

YOUR ORDER NO. _____
MANUFACTURER _____
MFG. ADDRESS _____

Receipt of the above order is hereby acknowledged and accepted. We can furnish as specified and will ship on or before _____ DATE

VIA ☐ FREIGHT ☐ EXPRESS ☐ AIR EXPRESS ☐ PARCELPOST ☐ OTHER (EXPLAIN)
(CHECK METHOD OF SHIPMENT)

DATED _____ 19____ SIGNED _____ VENDOR

BY _____ TITLE

(DO NOT FAIL TO INSERT SHIPPING DATE)

Form 332 4th Rev. TAMPA SHIPBUILDING CO., INC. REQ. NO. PO. NO. DATE

PURCHASE REQUISITION — CHANGE ORDER

SUBJECT Actual Size 8" deep x 11" wide FOR DEPT. HULL OR ACCT. NO.

ITEM NO.	QUANTITY TO ORDER	CHANGE FROM	ITEM NO.	QUANTITY TO ORDER	CHANGE TO

Reason for Above Changes

Requisitioned By | Approved by | Checked by Storekeeper

Purchasing Dept. Action Date

Distribution: 1st Sht. White—Pur. Dept.; 2nd Sht. White—Navy, Green—To Maker, Pink & Blue—Stores, Goldenrod—Prod. or Acct., Yellow—Requisitioner Buyer

making corrections and changes to purchase orders, the procedure being the same as for the Purchase Order."

The Purchase Order *per se* is minus any terms or special conditions other than those indicated on the copy reproduced. However, the request for quotation carries on the reverse side, the following conditions:

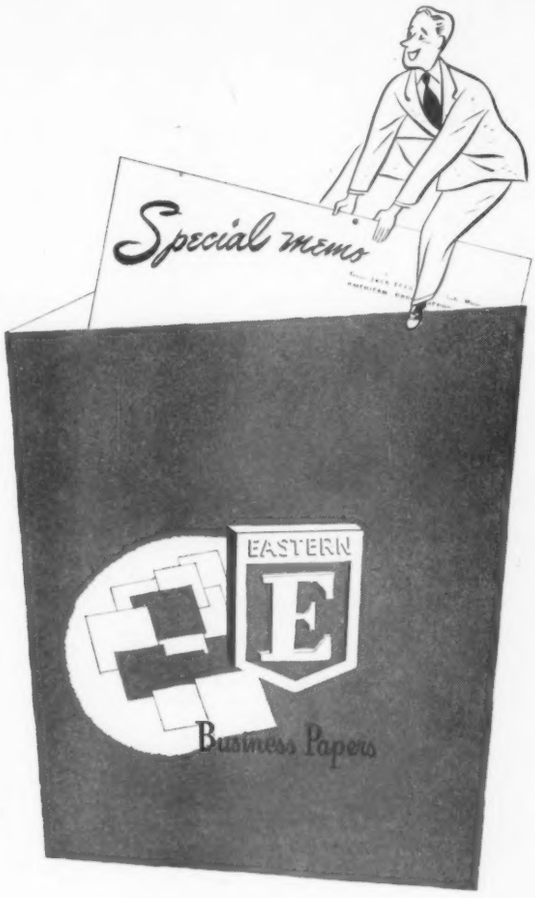
"Prices should be stated in units of quantity specified with packing included.

"Time of delivery must be stated in definite terms. If time varies for different items, the bidder shall so state.

"Samples of items, when required, must be furnished free of expense, and if not destroyed, will, upon request, be furnished, at bidder's expense.

"The Tampa Shipbuilding Company reserves the right to reject any or all bids, and unless otherwise specified by the company or by the bidder to accept

(*Forms Forum Continued on page* 274)



How to come up with a Bright Idea

Just dig into our portfolio "Eastern Fine Papers For Business."

There you will find ideas...plenty of them...ideas for letterheads, forms, inter-office memoranda...ideas for using colors to your advantage.

Above all, you will get a better idea of how well rounded the Eastern line of fine papers for business really is. You will see samples of Atlantic Bond, Ledger, Duplicator and Mimeo papers as well as similar sheets in our Manifest grade. And to help you in buying, you will find in this portfolio the handy chart giving sizes, weights and colors of our papers that can be ordered from your nearest Eastern merchant. Send for this portfolio today.

Atlantic Bond

MADE BY
EASTERN CORPORATION
BANGOR, MAINE

HOW TO STAND OUT IN THE MORNING MAIL!

WHEN YOUR SALES MESSAGE is style . . . when you want to be extra sure that it won't end up in the wastebasket—see that it is printed on a paper of smart distinction. Put your problem up to your printer. Paper is his bread and butter—he has the expert information you need at his fingertips. For fashion-wise promotions we're confident his selection will be

Rising Line Marque

- √25% rag
- √2 weights
- √3 pastel shades and white
- √Exclusive pattern derived from Italian Handmade paper
- √Envelopes in 6 sizes
- √Excellent printing surface for die-stamping, lithography, gravure or letterpress.

When you want to KNOW . . . go to an expert!

Rising Papers

Rising Papers

Ask your printer . . . he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

For advertising and book rates, call your agency or write . . .

MacRae's Blue Book

A DIRECTORY OF AMERICAN INDUSTRY

26 E. HURON ST. . CHICAGO 11, ILL.

MADE VICE PRESIDENT UARCO SALES

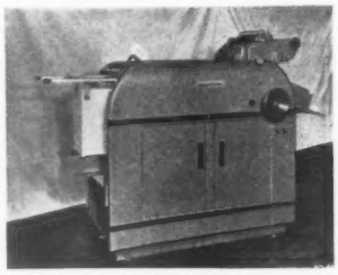
The appointment of William J. Thompson as vice-president in charge of sales of UARCO Incorporated, Chicago, Ill., manufacturer of continuous business forms, was announced by W. R. Barker, president of the firm.

Mr. Thompson became associated with the company in 1926 as a salesman, and served successively as district manager, division manager, and finally general sales manager previous to his present appointment.

NEW MULTIGRAPH MODEL 250

The new Multigraph Model 250, designed to eliminate waste in the reproduction and use of business forms in nearly every phase of industrial or office operation, is announced by Addressograph-Multigraph Corporation, of Cleveland.

In addition to its streamlined design, and unit construction of welded angle-



Well constructed unit in beautiful streamlined design

iron frame rigidly cross-braced to insure permanent alignment of all correlated elements, the Model 250 has many new features, including an automatic vacuum-type paper feeder capable of handling weights and grades of paper from bonds of 13-pound substance to cardboard 1/16-inch thick.

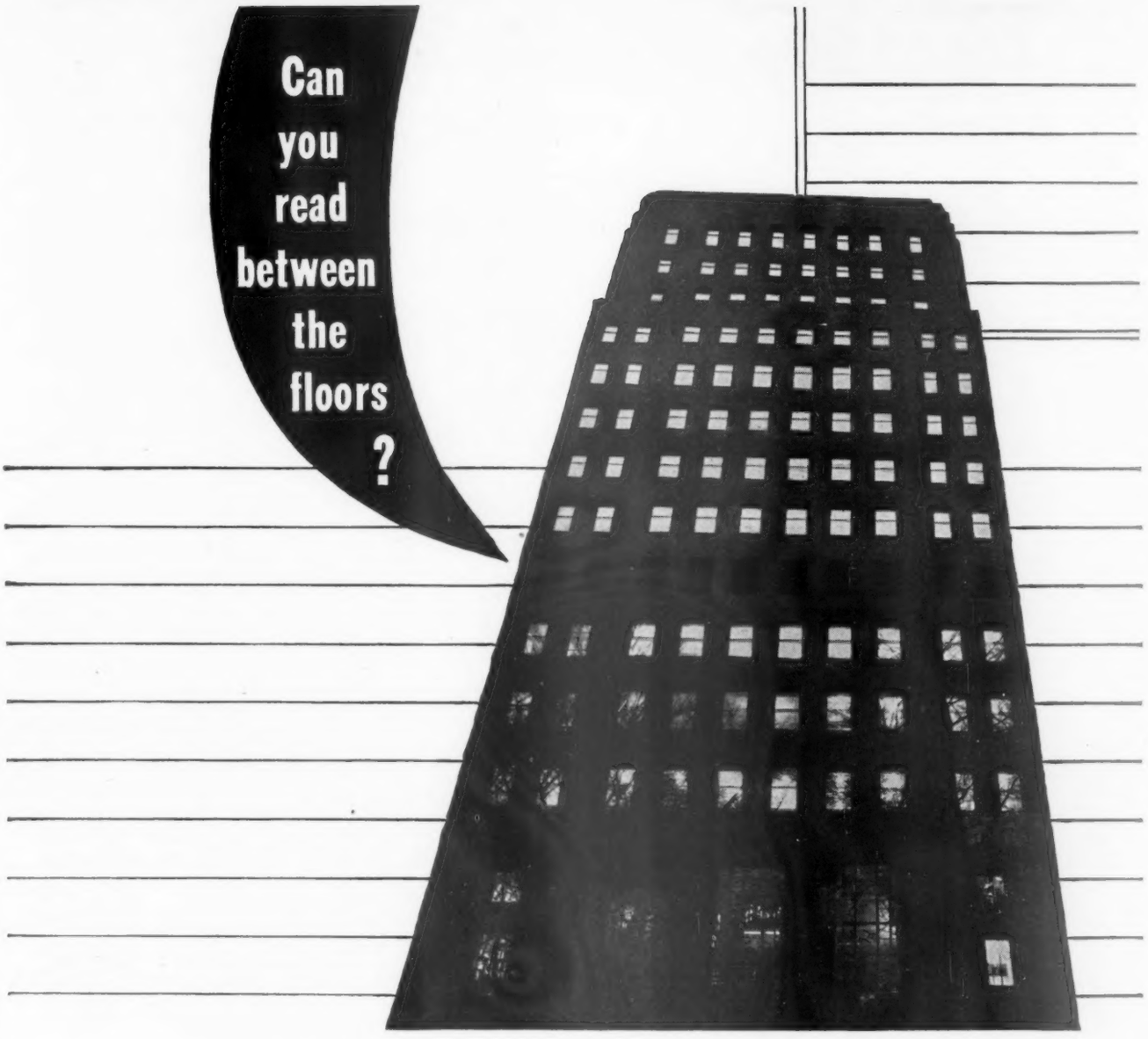
It is equipped with a hand-feed table for use when work cannot be fed automatically and has a built-in power drive with centrifugal clutch, a variable speed control with a range of from 3,000 to 6,000 revolutions per hour, and a simple timing device which makes feeder and jogger timing easier, faster and more positive.

Other new features include ink fountain control, an ink roller cleaning device, faster ribbon feed, micrometer platen adjustment, wide paper stop fingers, needle and oilite bearings and a cabinet stand which has doors on the operating side and storage racks for ink rollers, tools and frequently used supplies.

The Model 250 occupies an overall floor space 27½ inches by 66 inches and has an operating height at the conveyor board of the automatic paper feeder of 35 inches and an overall height of 46 inches. It weighs 515 pounds and is equipped with leveling feet at each corner.

It provides the means to convert facsimile typewriting from metal type

(*Continued on page 272*)



1, 2, 3, 4 — lit up. 6, 7, 8, 9, 10 — lit up. 5 — dark.

Night after night — same story. The force on the Fifth makes the train. The others, hurried and harried, spend extra hours on a treadmill.

Overtime *can* be necessary — especially during vacations. But lights burning for nights on end are often a sign of inefficient business forms. Here, a Moore specialist can help.

Moore Business Forms, Inc., studies your business forms one by one — in co-operation with your staff. When a change will benefit, Moore recommends change. Moore spots corners to cut in printing, scrutinizes quantities. In some cases one custom-designed form can replace three or four old forms — reducing laborious recopying and the margin of human error.

An Albany manufacturer writes: "Installation of your four-part Fanfold billing form and three-part Speediset has increased clerical output per hour with no appreciable increase in form cost." A cement executive adds: "Equally important is the enthusiastic response of our personnel."

Backed by sixty-five years of experience, Moore is prepared to serve businesses of every size and kind — from a corner store in Portland, Maine, to a corporation in Portland, Oregon. For information, call on the nearest Moore division, as listed below, or its local office. *Moore stands ready to supply you with everything from a simple sales book to the most intricate multiple-copy forms.*

AMERICAN SALES BOOK CO., INC., NIAGARA FALLS; ELMIRA, N. Y.
PACIFIC MANIFOLDING BOOK CO., INC., EMERYVILLE; LOS ANGELES, CALIF.
GILMAN FANFOLD CORP., NIAGARA FALLS, N. Y.
COSBY-WIRTH MANIFOLD BOOK CO., MINNEAPOLIS, MINN.
MOORE RESEARCH & SERVICE CO., INC., NIAGARA FALLS, N. Y.
SOUTHERN BUSINESS SYSTEMS, INC., ORLANDO, FLA.
MOORE BUSINESS FORMS, INC. (New Southern Div.), DALLAS, TEX.; ATLANTA, GA.
In Canada—Moore Business Forms, Ltd., succeeding Burt Business Forms, Ltd., Toronto; Western Sales Book Co., Ltd., Winnipeg and Vancouver; National Sales Check Book Co., Ltd., Montreal

MOORE BUSINESS FORMS, INC.

ADV. BY N. W. AYER

(*Continued from page 270*)

through a ribbon or by the direct-inking process with a fidelity that makes it adaptable to the reproduction of letters, circulars, reports, lists, mailing cards, promotional material, letterheads, and a wide variety of other material of a similar nature.

ORGANIZE PAPER CENTER, INC.

Organization of the Paper Center, Inc., 126 East 59th St., New York, N. Y., offering service in the merchandising of printing, packaging and specialty papers is announced by Bernard H. Ross, president of the new company. Permanent quarters are being established at 18 John Street, New York City. Mr. Ross previously was sales promotion manager for the Milton Paper Company.

SWIVELED DUPLEX PLASTIC LETTER TRAY

The accompanying illustration shows the Moldmaster "Rotarian" plastic letter tray, the upper section of which swings either way on a swivel, permitting ready access to papers in the lower tray, an-

nounced by Art Steel Sales Corp., 300 East 145th Street, New York. The "Rotarion" will accommodate letter and legal size correspondence and papers. The trays are of molded phenolic plastic fabrication. The upper tray is readily removed.

DESKS REFLECT ECONOMIC CULTURE OF A NATION

Economic culture of a nation is mirrored in the desks used for the transaction of business, says the Wood Office Furniture Institute.

When business was on a barter basis, carried on with small local transactions, there was little need for records, offices or desks. The ordinary table served most of the need of this era.

Following the invention of the printing press in the sixteenth century, however, the veil of illiteracy began to lift from the world. The Bible was widely distributed and people were stimulated to learn to read it. Later on they learned to write. A Bible-box, to hold the Bible

(*Continued on page 274*)

*Levelcoat** PRINTING PAPERS

A PRODUCT OF Kimberly Clark RESEARCH

Distributed by

ALABAMA
Birmingham — Sloan Paper Company

ARIZONA
Phoenix — Zellerbach Paper Company

ARKANSAS
Little Rock — Arkansas Paper Company

CALIFORNIA
Eureka — Zellerbach Paper Company
Fresno — "
Los Angeles — "
Oakland — "
Redding — "
Sacramento — "
San Diego — "
San Francisco — "
San Jose — "
Stockton — "

COLORADO
Denver — Carpenter Paper Company
Pueblo — "

CONNECTICUT
Hartford — The Rourke-Eno Paper Co., Inc.
New Haven — Bulkley, Dunton & Co.

DISTRICT OF COLUMBIA
Washington — Barton, Duer & Koch Paper Co.

FLORIDA
Jacksonville — Knight Brothers Paper Company
Miami — "
Orlando — "
Tallahassee — "
Tampa — "

GEORGIA
Atlanta — Sloan Paper Company

IDAHO
Boise — Zellerbach Paper Company

ILLINOIS
Chicago — Berkshire Papers, Inc.
Chicago — Chicago Paper Company
Chicago — Midland Paper Company
Springfield — Capital City Paper Company

INDIANA
Indianapolis — Crescent Paper Company

IOWA
Des Moines — Carpenter Paper Company
Sioux City — "

KANSAS
Topeka — Carpenter Paper Company
Wichita — Western Newspaper Union

KENTUCKY
Louisville — The Chatfield Paper Corp.

LOUISIANA
Baton Rouge — Louisiana Paper Co., Ltd.
New Orleans — The D and W Paper Co.
Shreveport — Louisiana Paper Co., Ltd.

MARYLAND
Baltimore — Baltimore Paper Company, Inc.

MASSACHUSETTS
Boston — Carter, Rice & Company Corp.
Worcester — Charles A. Esty Paper Company

MICHIGAN
Detroit — Seaman-Patrick Paper Co.
Grand Rapids — Carpenter Paper Company

MINNESOTA
Duluth — John Boshart Paper Company
Minneapolis — Carpenter Paper Co.
St. Paul — "

MISSOURI
Kansas City — Carpenter Paper Company
St Louis — Beacon Paper Company
St Louis — Shaughnessy-Kniep-Hawe Paper Co.
St Louis — Tobey Fine Papers, Inc.

MONTANA
Billings — Carpenter Paper Company
Butte — "
Great Falls — "
Missoula — "

NEBRASKA
Lincoln — Carpenter Paper Company
Omaha — "

NEVADA
Reno — Zellerbach Paper Company

NEW JERSEY
Newark — J. E. Linde Paper Company

NEW MEXICO
Albuquerque — Carpenter Paper Company

NEW YORK
Albany — Hudson Valley Paper Company
Brooklyn — A. Price & Son, Inc.
Buffalo — Paper Service, Inc.
Buffalo — Union Paper & Twine Co., Inc.
New York — Baldwin Paper Company, Inc.
New York — Bulkley, Dunton & Co.
New York — The Canfield Paper Co.
New York — Forest Paper Company, Inc.
New York — J. E. Linde Paper Company
New York — A. Price & Son, Inc.
New York — Royal Paper Corporation
Rochester — Paper Service, Inc.
Syracuse — Paper Service, Inc.
Troy — Troy Paper Corporation

NORTH CAROLINA
Charlotte — Dillard Paper Company
Greensboro — "

NORTH DAKOTA
Fargo — Western Newspaper Union

OHIO
Cincinnati — The Chatfield Paper Corp.
Cleveland — The Petrequin Paper Company
Columbus — The Scioto Paper Company
Toledo — The Ohio & Michigan Paper Co.

OKLAHOMA
Oklahoma City — Carpenter Paper Company
Tulsa — Tayloe Paper Company of Oklahoma

OREGON
Eugene — Zellerbach Paper Company
Portland — "

PENNSYLVANIA
Philadelphia — Paper Merchants, Inc.
Philadelphia — D. L. Ward Company
Pittsburgh — The Chatfield & Woods Co. of Pa.

RHODE ISLAND
Providence — Carter, Rice & Company Corp.

SOUTH CAROLINA
Greenville — Dillard Paper Company

TENNESSEE
Chattanooga — Bond-Sanders Paper Co.
Jackson — Carroll Paper Company
Knoxville — Southern Paper Company
Memphis — Tayloe Paper Company
Nashville — Bond-Sanders Paper Co.

TEXAS
Austin — Carpenter Paper Company
Dallas — "
Fort Worth — "
Harlingen — "
Houston — L. S. Bosworth Co. Inc.
Lubbock — Carpenter Paper Company
San Antonio — "

UTAH
Salt Lake City — Zellerbach Paper Company

VIRGINIA
Richmond — Cauthorne Paper Company

WASHINGTON
Seattle — Zellerbach Paper Company
Spokane — "
Walla Walla — "
Yakima — "

WISCONSIN
Milwaukee — The Bouer Paper Company

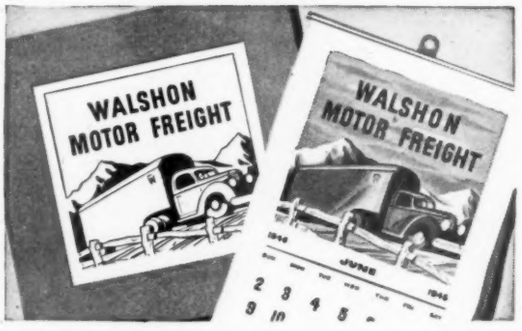
EXPORT AGENTS: American Paper Exports Inc., New York, U. S. A.
Cable Address: APEXINC — New York

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin
122 E. 42nd St., New York 17 • 8 S. Michigan Ave., Chicago 3 • 155 Sansome St., San Francisco 4
*TRADE MARK

This advertisement is one of a series appearing in four colors in Fortune, Nation's Business, United States News, Newsweek and Business Week.

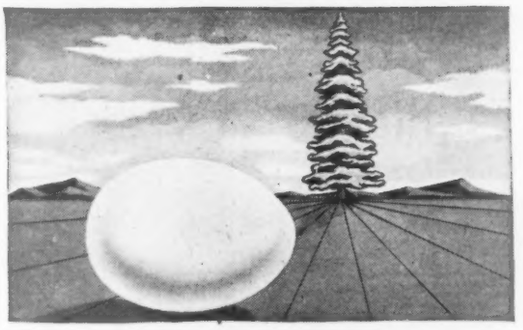
Test your word knowledge

of Paper and Printing



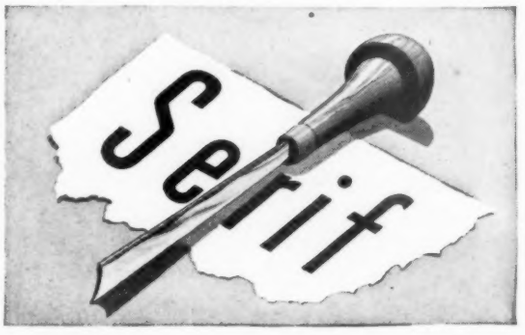
1. Fake Color

- ☐ Faked black plate from color copy
- ☐ Distorted color separation
- ☐ Color plates from monochromatic copy



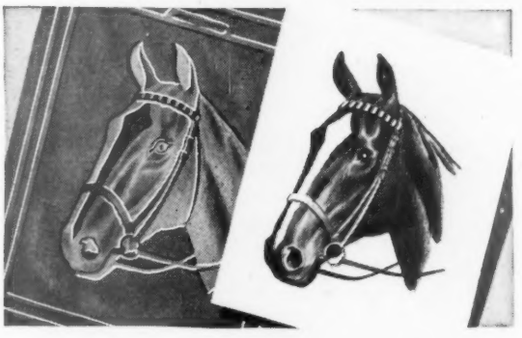
2. Alum

- ☐ A kind of pulpwood
- ☐ Aluminum sulphate used in paper
- ☐ Egg white used in photo paper



3. Serif

- ☐ A Gothic type face
- ☐ A fine line in a type character
- ☐ An engraver's tool



4. Multifect

- ☐ A plastic electro mold
- ☐ A binding process
- ☐ A paper for volume printing

ANSWERS

1 Fake Color is the production of color plates from monochromatic (single hue) copy. Beautiful color work, from the simplest to the most subtle, reproduces with glowing fidelity against the clear, rich whiteness of Levelcoat*—finer printing papers by Kimberly-Clark.

2 Alum is aluminum sulphate, used to set the size, fix color and flocculate the clay in paper. To protect Levelcoat uniformity, Kimberly-Clark makes its own alum, using carefully selected clay and sulphuric acid. No element of quality is ever left to chance.

3 A Serif is a fine line in a type character, generally at the top or bottom. The clear, incisive character of good typography is preserved and heightened when impressed on Levelcoat — considered by thousands of printers a paper of unsurpassed quality.

4 Multifect is a Kimberly-Clark paper especially processed to combine economy and fine printability for big-volume press runs. Outstanding uniformity, brightness, ink affinity and opacity make Multifect paper a splendid medium for more effective printed selling.

*Levelcoat**

PRINTING PAPERS

If our distributors cannot supply your immediate needs, we solicit your patience. There will be ample Levelcoat Printing Papers for your requirements when our plans for increased production can be realized.

A PRODUCT OF Kimberly Clark RESEARCH

KIMBERLY-CLARK CORPORATION

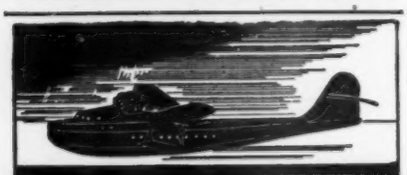
NEENAH, WISCONSIN *TRADE MARK

Old Town

RIBBONS
CARBONS
Duplicating
Supplies

For those who prefer the best

BROOKLYN 17, N. Y.



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS

Specify one of
ESLEECK
THIN PAPERS

Ideal for Air Mail, Branch Office and Foreign correspondence.

ESLEECK MANUFACTURING COMPANY
TURNERS FALLS, MASSACHUSETTS

(*Forms Forum Continued from page 268*)

TAMPA SHIPBUILDING COMPANY
INCORPORATED

DATE

AMENDMENT No.

TO:

PURCHASE ORDER NO.
REQ. NO.

MANUFACTURER
PLACE OF MFG.

VENDOR'S ORDER NO.
MFG. ORDER NO.

INSPECTION

PLEASE MODIFY THIS PURCHASE ORDER AS SPECIFIED HEREIN. ALL OTHER TERMS AND CONDITIONS AS OUTLINED IN THE ORIGINAL PURCHASE ORDER AND ADDENDA THERETO REMAIN UNCHANGED.

REASON FOR THIS AMENDMENT

ITEM	QUANTITY	DESCRIPTION	PRICE

MATERIAL FOR
APPROVED SUPERVISOR OF SHIPBUILDING, U. S. N., TAMPA, FLORIDA

TAMPA SHIPBUILDING COMPANY, INC.

BY DIRECTION

PLEASE ACKNOWLEDGE RECEIPT.

(DETACH HERE)

THIS IS TO BE FILLED IN AND RETURNED

TAMPA SHIPBUILDING COMPANY, INC.
PURCHASING DEPARTMENT
TAMPA 1, FLORIDA

AMENDMENT No.
PURCHASE ORDER No.

RECEIPT OF THE ABOVE AMENDMENT TO PURCHASE ORDER IS HEREBY ACKNOWLEDGED AND ACCEPTED.

DATED 19

SIGNED
VENDOR

BY
TITLE

any item in the bid. In case of error in the extension price, in the bid, the unit price will govern.

"No bid will receive consideration unless the following information is included:

(1) F.O.B. Point. (2) Terms and Discount. (3) Delivery Dates. (4) Unit prices. (5) Quotations and adequate descriptive material in triplicate. (6) Reference number of this request for quotation."

(*Continued from page 272*)

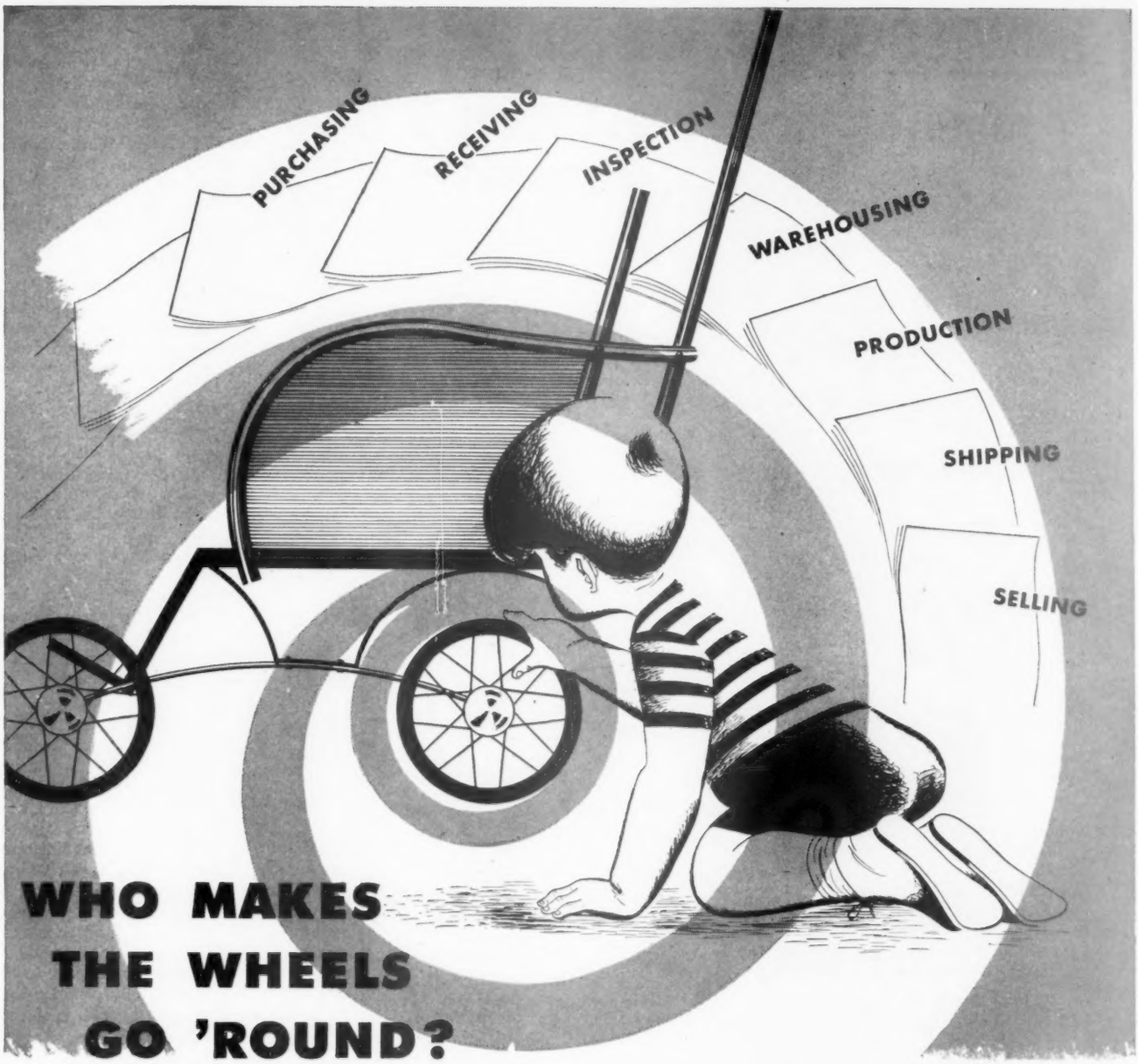
and writing materials, became a common sight in the homes of this age.

As trade and commerce developed, this Bible-box grew in size and became the desk-box. Drawers, compartments and legs were added. In its final stages it was not much different from the high book-keeping desks used in the United States until new standards of office management crystallized early in the present century.

Prior to the development of power machinery, business was conducted on an informal basis, chiefly in the home, or the shop or store adjoining the home. To meet the needs of planters and others deriving their livelihood from local enterprise, the so-called "secretary" was evolved. Usually with slanting front which moved down to make a writing surface, and with pigeon-hole compartments and shelves for books or papers above, the secretary was one of the most popular desks ever evolved. It took on many shapes and it followed the styles of the many furniture periods through which it passed. The secretary still is used extensively in many homes in America. However, the expansion of the income tax, wherein even a small business or professional man must keep accurate records of his transactions throughout the year, and turns into an accountant four times a year in filing pay-as-you-go returns, is creating a demand for more modern, streamlined flat-top home desks, continues the Institute.

In English trading centers where money passed hands the famous counting desk was evolved. This was in use in banks, coffee houses, taverns and other community centers for nearly three centuries. The counting desk was a small table on which squares were ruled so as to form a type of abacus. Counters, like poker chips, were used in computing rents, interest and other financial transactions. The word "counting house" is

(*Continued on page 276*)



WHO MAKES THE WHEELS GO 'ROUND?

Not only "who" makes them go 'round—but "what." For back of that stroller—speeding it through many phases of production and distribution—were orders, receipts, requisitions, invoices, and a lot of other forms . . . probably UARCO forms.

For every phase of every business—from the purchasing of raw materials to the retailing of the finished product—correct forms are essential to the speed, efficiency and control of single and multiple business operations.

The design and application of these correct business forms is UARCO's job. They've been at it a long time, and their advice has avoided many headaches. UARCO can help you evaluate the methods and forms you're using now—can determine the advisability of combining several forms and cutting the cost of routine handling work. Whatever your business—whatever its size—if it requires business forms, it will pay you to make sure they're designed for efficiency.

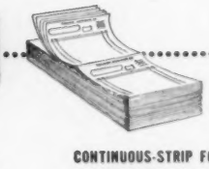
Call your UARCO representative today. Without any cost or obligation on your part, he'll make a careful analysis of your present forms . . . perhaps his suggestions for improvement will save you hundreds of dollars. So call or write today. UARCO INCORPORATED, Chicago, Cleveland, Oakland. *Offices in All Principal Cities.*

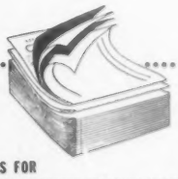
AUTOGRAPHIC REGISTERS

SINGLE SET FORMS

UARCO
INCORPORATED

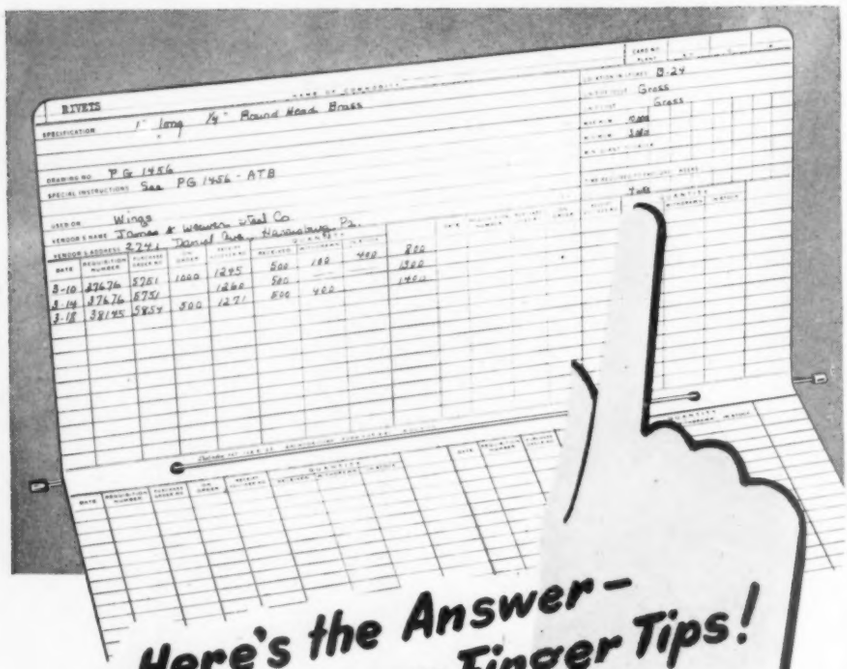
BUSINESS FORMS





CONTINUOUS-STRIP FORMS FOR HANDWRITTEN TYPEWRITTEN BUSINESS MACHINE RECORDS

HOW SOON can we get some of these brass rivets?



This is a standard POSTINDEX record used in the Purchasing Department of a leading corporation. It gives complete information on a commodity on one 4-page form which is available at the flip of a finger. Description, where it is used, who makes it, quantity on hand, its location in Stores and how long it takes to procure are all shown on this one record.

Learn more about this time and labor-saving method of keeping your records by writing for this new POSTINDEX booklet—"The POSTINDEX SYSTEM of PURCHASE CONTROL." This 16-page, 4-color booklet illustrates and describes a number of other POSTINDEX records used by Purchasing Departments in leading industries and also describes in detail the operation of POSTINDEX Visible Index Files. You may find a form illustrated which will simplify some operation in your department or just the form you need may be in the POSTINDEX Library of 20,000 forms. There is no obligation. Write today. Address Department P, Postindex Company, Jamestown, N. Y.

VISIBLE INDEX FILES FOR BUSINESS CONTROL
POSTINDEX

POSTINDEX *Visible Index* **FILES**

Manufactured by **POSTINDEX COMPANY**

DIVISION OF ART METAL CONSTRUCTION CO., JAMESTOWN, N. Y.

(Continued from page 274)

derived from this desk.

An offshot of the secretary was the cylindrical top desk, which made its appearance around the beginning of the nineteenth century. The desk front was formed of wood in a half circle, which disappeared into the roll-top desk, which for half a century was the chief type of desk manufactured in the United States. There still are thousands of roll top desks in use by country doctors, lawyers and business men throughout America.

Early American filing cabinets also had roll top fronts. These cabinets usually had two tiers of trays, similar to the letter trays used on the tops of modern desks for incoming and outgoing correspondence.

With the expansion in use of power machinery the tempo of business was speeded up, continues the Institute. Production methods were developed so that there was a smooth flow of work from raw materials to finished products. Office methods also were revolutionized. Roll top desks, which also served as a filing cabinet, did not fit in the picture of modern business. So desks lost their tops, correspondence and other records flowed daily to central filing locations, and desks became units of production in the administrative branch of business.

In the streamlined office of today, business flows speedily over clean, uncluttered desks, and important papers are kept in convenient and protected files. The modern office truly reflects the systematic and efficient way we Americans have of accomplishing the job we find necessary to do. The modern office is streamlined to carry out a "Do it Now" philosophy. Despite the introduction of new materials, wood still is preferred by executives and administrative heads for desks and chairs. Although less ornate than their prototypes, modern wood desks have form and beauty which gracefully combine the charm of the past with the utility of the present.

* * *

ADDRESSOGRAPH-MULTIGRAPH CORP. ELEVATES CASSON TO VICE PRESIDENT

Promotion of W. H. Casson from works manager to vice president in charge of manufacturing of the Addressograph-Multigraph Corporation, has been announced by President and General Manager G. C. Brainard. The action was taken at a recent meeting of the corporation's board of directors.

Mr. Casson, who has made manufacturing his lifetime career, has risen in the ranks of industry from apprentice to his present executive position. In his new capacity, he will head the company's worldwide manufacturing operations in the United States, Canada, Great Britain and in other countries in which subsidiary operations are carried on.

Mr. Casson's career with Addressograph-Multigraph began in 1928 as production manager of the Addressograph

(Continued on page 278)

"how many **hours** can a printer save each year?"

We don't pretend that we can give you the exact figures . . . but we do know that any printer who uses INTERNATIONAL OFFSET saves *plenty* of press time.

That's because INTERNATIONAL OFFSET is specially made to give the most productive kind of press performance—by offset-lithography or letterpress. This flat-lying paper safeguards against curling—speeds up long runs of single or multiple color jobs.

Strong, surface-sized and fuzz free, INTERNATIONAL OFFSET can be depended upon when time is short but a quality job is wanted. Naturally it's a top choice with leading lithographers for broadsides, envelope enclosures, brochures or booklets.

This paper is not yet plentiful enough to supply everyone who wants it. As the world's largest maker of papers, however, we are putting all our efforts into increasing production as far as current conditions permit. International Paper Company, 220 East 42nd Street, New York 17, N. Y.

INTERNATIONAL PAPERS *for Printing and Converting*

TENSION ENVELOPES
TRADE MARK REG.
For Every Business Use

BANKERS FLAP ENVELOPE
SAFE SEALING OF BULKY MAIL
TENSION ENVELOPE CORP.
FIVE FACTORIES
SELLING DIRECT TO THE USER
New York 14, N. Y. ★ Minneapolis 15, Minn.
St. Louis 3, Mo. ★ Des Moines 14, Iowa
Kansas City 8, Mo.

Absolutely accurate! Finds correct withholding tax FAST, with one hand! Plexiglas dial eliminates errors. Signals in GREEN when no tax necessary. Complete with charts, replaceable as needed. $12.50 list. 10 day test.

Redifixt 1946 W-2 Withholding Tax Form

Best of 'em all, fits in #9 window envelope . . . saves time and annoyance . . . satisfies Federal, State and Social Security requirements in ONE swift operation! Purchasing agents, write for sample and prices, imprinted or plain.

CONSOLIDATED
BUSINESS SYSTEMS, INC.
30 Vesey St., Dept. 006, N. Y. City 7

(Continued from page 276)

plant in Chicago. In 1931, he was transferred to Cleveland and was the key man in setting up manufacturing operations at the headquarters plant. On April 1, 1935, he was made plant superintendent and on February 1, 1936, general superintendent. He rose to works manager in August, 1942, a position which he occupied until his current elevation.

Mr. Casson's industrial career began at the age of 15 as an apprentice machinist with the Parke Davis Company of Detroit and he completed his apprenticeship as a tool and diemaker in the tool room of the Ford Motor Company's Highland Park Plant. He began to study shop systems, controls and management subjects at 20 while occupying his first supervisory job in a small job shop

W. H. Casson, Vice-President

and became shop supervisor at the Laconia Car Company, Laconia, New Hampshire, at the age of 23. He rose to the position of general foreman in charge of fabrication.

From December, 1916, to August, 1919, Mr. Casson was with the Remington Arms Company's Bridgeport Works, where he rose from the position of assistant foreman to works manager. He was also connected in supervisory capacities with the Rhodes Hochrein Manufacturing Company, the Savage Arms Company, in Sharon, Pa., and the Remington Cash Register Company at Ilion, New York, before joining Addressograph-Multigraph.

DON'T TRY TO BUILD PAPER INVENTORIES

The present shortage of paper may continue through 1946 and into next year says Crocker-McElwain's *Paper News Poster*. In spite of the fact that the paper industry is currently turning out paper and paper board at the annual rate of 18 million tons, the demand is still greater than production. Some people find this hard to believe because the demands of the Government have been so drastically reduced. However, the demand for paper from commercial printers is steadily increasing.

Since the end of the war, Government restrictions on weights and colors have been lifted. With the lifting of these restrictions there was an instant demand for the heavier weights. The paper mills produced more pounds of paper but did not necessarily increase the number of sheets of paper. Many of the mills that started on a six-day production week following the war, found themselves in a position of being able only to operate five days a week because the heavier weights cut down their inventory of pulp and rags.

We have heard quite a bit about the Swedish and Scandinavian pulp. Most of the shipments from that area have been unbleached pulp which cannot be used in the manufacture of high rag content papers.

The paper situation is so critical that Printing Industry of America has even thought of requesting the Civilian Production Administration to reinstate paper controls.

However, if people will still buy according to their needs and not try to build up inventories too rapidly, we feel that restrictions will not be necessary, and that gradually paper will get back to a better balance between supply and demand.

NEW ALUMINUM FOIL LAMINANT

A laboratory report from Paisley Products, Inc. 170 Canalport Avenue, Chicago 16, Illinois, describes the properties adhesive designed for foil lamination.

Recommended primarily for roll applicator machines the new adhesive will handle all grades of aluminum foil to cellophane, acetate, glassine, bond kraft, sulphite chip-board and other materials, according to the manufacturer. The report gives coverage data and price lists in all packings.

The manufacturer maintains a Technical Service Department to assist users in adapting this product to their specific requirements. Copies of the complete report are available upon request.

HERCULES ANNOUNCES PERSONNEL CHANGES PAPER MAKERS CHEMICAL DEPT.

Six members of the Paper Makers Chemical Department of Hercules Powder Company have been appointed to new positions, effective May 1.

Thomas G. Batchelor, resident manager of Hercules Powder Company (Canada) Ltd., Freeman, Ontario, will move to Wilmington, Del., as assistant director of sales of the department. He has been resident manager of the Hercules Canadian subsidiary since 1937, and was elected to the board of directors last September.

E. Hoke Martin, PMC sales representative at Kalamazoo, Michigan, will succeed Mr. Batchelor as resident manager of the Freeman plant.

Henry Reeves, Jr., now with the Paper Makers Chemical Department in Wilmington, becomes departmental sales representative at Kalamazoo succeeding Mr. Martin.

Henry L. Mellen, formerly sales representative at Holyoke, Mass., has been appointed assistant manager at that location.

Thomas L. Stirling, with the Industrial Chemical Division of the Hercules PMC Department in New York City, will join the paper chemicals sales staff at Holyoke. He will be succeeded in New York by L. E. McKenzie, formerly resident manager of the Industrial Chemical Division's Boston, Mass., office.

FREE DECAL SELECTOR

A new slide-rule type Decalcamnia Selector to assist manufacturers and product designers in the specification of the correct decal nameplate, trademark,

instruction or wiring diagram for application on difficult and unusual surfaces is being distributed by the Meyercord Co., Chicago Decal manufacturer.

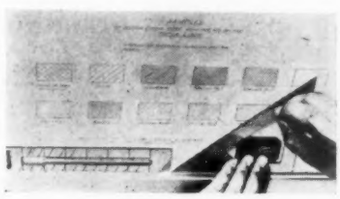
The Decal Selector enables the prospective user to quickly determine how eleven types of decals may be applied to 14 different surfaces, using any one of seven application methods.

Application techniques shown vary from simple water adhesives to easy-to-use special cements. All are adaptable to production-line speeds. The Selector indicates decals resistant to abrasion, acids, and extremes of humidty and temperature, and their application to paint, lacquer, enamel, raw wood, glass, metals, cloth, rubber, plastics and even crinkle finishes.

The company will send the Selector on request to manufacturers, product designers, purchasing agents and others interested in the use of decals.

NEW DRAFTING DEVICES MADE OF PLEXIGLAS

Two new time-saving drafting instruments have been made of the transparent acrylic plastic, Plexiglas, by the Dol-



Transparent plastic will not cast shadows

gorukov Manufacturing Company of Washington. The "hatch-liner", at right, used for doing rapid and uniform section lining, consists of a 45° triangle and a small irregular octagonal shaped "center piece" which fits into the central opening of the triangle. The "center piece" is numbered to indicate the various positions

(*Continued on page* 281)

in letterhead paper
THE WATERMARK IS YOUR quality guarantee
• Here's the new simple, foolproof method of buying fine letterhead paper. Look at the watermark. If it reveals the answers to these three questions, you'll have the finest paper available.
The finest papers are made from cotton fibres . . . the more cotton fibre, the finer the paper.
They're made by craftsmen, like the men at Fox River, who have been making fine cotton fibre papers since 1883.
Ask your printer, lithographer or engraver about Fox River papers. He'll be glad to recommend the paper with the correct cotton fibre content for each business need.
BE SURE IT SAYS 3 THINGS
1 Does It Contain Cotton Fibre?
2 How Much Cotton Fibre? 25%-50%-75%-100%
3 Who Made It?
50% COTTON FIBRE
ENGLISH BOND
by
Fox River
Fox River Fine Papers
BOND, LEDGER AND ONION SKIN PAPERS
FOX RIVER PAPER CORPORATION
403-FS. Appleton Street
Appleton, Wisconsin

CLASSIFIED • CHEMICAL • MECHANICAL DATA • TRADE NAMES • ADDRESSES

all in **1**

CONVENIENT BOOK

ALL THE WHERE-TO-BUY-IT INFORMATION YOU NEED, RIGHT AT YOUR FINGER TIPS

PLANT PURCHASING DIRECTORY compiled especially for you, the industrial buyer, eliminates all non-essential classifications and gives you the information . . . and only the information you need . . . for the purchase of industrial supplies and equipment. It's all in one convenient, easy to handle 7-lb. book . . . and you can keep it right on your desk where you need it.

A CONOVER-MAST PUBLICATION

Formerly Plant-Production Directory

PLANT PURCHASING DIRECTORY

333 No. Michigan Avenue, Chicago 1, Illinois

(*Continued from page 279*)

in which it can be placed to achieve desired spacing of section lines. The Plexiglas "hatch liner's" transparency and dimensional stability recommend it strongly for engineering and classroom purposes; another advantage over triangles of more opaque materials is the fact that it does not cast shadows.

The Plexiglas "slot-letter" is a guide which enables draftsmen to do a freehand lettering job. Found in Army and Navy drafting rooms during the war, it is in still greater peacetime demand. Lettering is done directly through one of the slots, with the aid of reference lines engraved on the guide to insure proper inclination.

* * *

MANUAL ON JOB ANALYSIS AND EVALUATION

A complete working manual on the Technique of Job Analysis and Evaluation in the clerical, technical and administrative fields has been issued by The Weatherhead Company of Cleveland, Ohio.

The manual is standard 8½ x 11" size and consists of 135 pages of text. It is

Charles S. Mattoon,
Director Industrial Relations

a complete, practical working manual of salary job evaluation. The manual explains in detail the procedures used and is designed to enable interested companies to install the program with their own people without aid of outside assistance. It takes the mystery out of job evaluation and permits anyone with a good company background and knowledge of the jobs within an organization to analyze and evaluate the jobs of his company and arrive at a schedule of proper and equitable salaries.

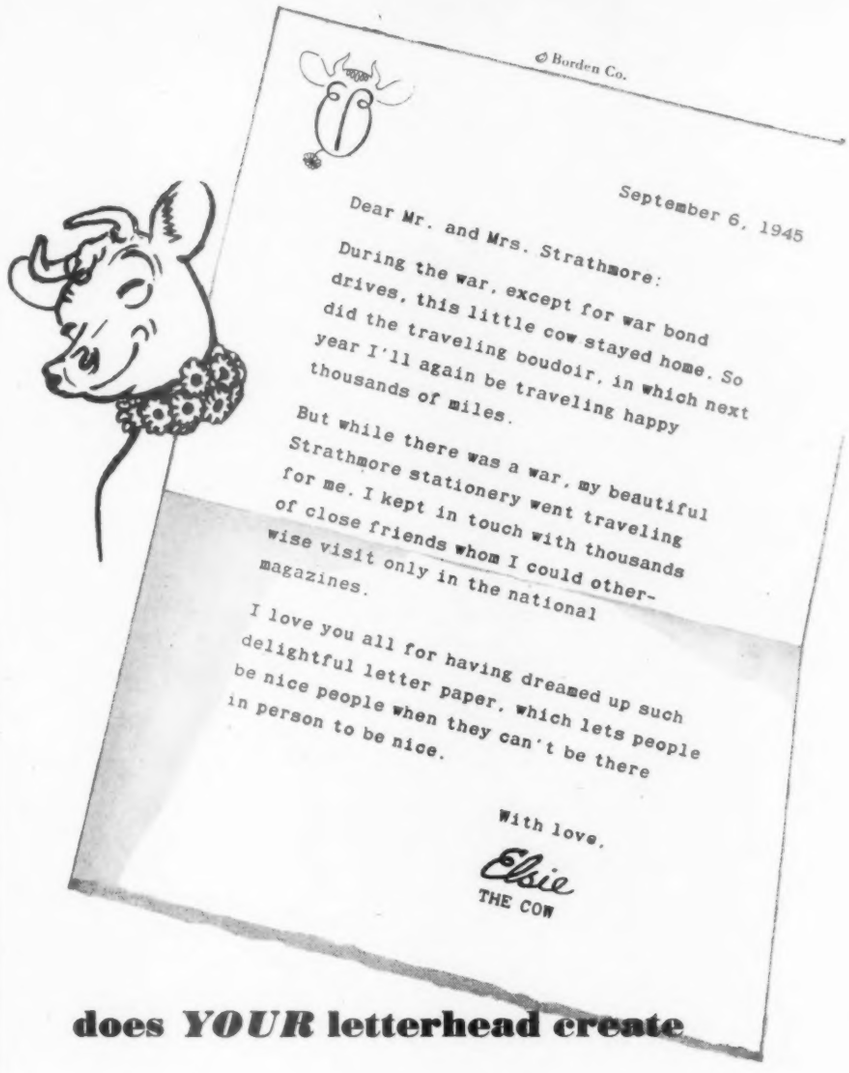
The textbook has been written by Charles S. Mattoon, Director of Industrial Relations of the Weatherhead Company, nationally recognized expert on the subject.

"It is being made available to management officials on a national scale by the Weatherhead Company" says Mattoon "in the interests of better management."

Copies can be secured without cost by management executives requesting it on company stationery by addressing The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

(*Continued on page 285*)

Prominent Users of Strathmore Letterhead Paper: No. 63 of a Series


© Borden Co.
September 6, 1945
Dear Mr. and Mrs. Strathmore:
During the war, except for war bond drives, this little cow stayed home. So did the traveling boudoir, in which next year I'll again be traveling happy thousands of miles.
But while there was a war, my beautiful Strathmore stationery went traveling for me. I kept in touch with thousands of close friends whom I could otherwise visit only in the national magazines.
I love you all for having dreamed up such delightful letter paper, which lets people be nice people when they can't be there in person to be nice.
With love,
Elsie
THE COW

does *YOUR* letterhead create

GOOD WILL?

The Borden Company chose Strathmore paper for Elsie because it makes a fine impression on her friends and fans. The Strathmore watermark is your assurance of that quality which will make an equally fine impression for you.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Strathmore Bond, Thistlemark Bond, Bay Path Bond, Alexandra Brilliant.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

Please

BE PATIENT,
YOU'RE GETTING YOUR SHARE
OF BOSTONS

We know how anxious both you and your customers are for BOSTON Pencil Sharpeners. It's the same demand story all over the country. And we are working at the greatest capacity in our history to cut down our *back* log of orders and, as soon as possible, get to current demands.

It's no wonder everybody wants a BOSTON. Many years have proved their exceptional quality and ability to stand up and deliver good service under excessive demand. We're grateful for your patience and assure you that we're rapidly closing the gap in the production picture. In the meantime, everybody is getting his *share*.

BOSTON
PENCIL SHARPENERS

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CAMDEN, N. J.
SPEEDBALL PENS HUNT PENS

EVALUATING TEN TONS OF GERMAN PATENT DOCUMENTS

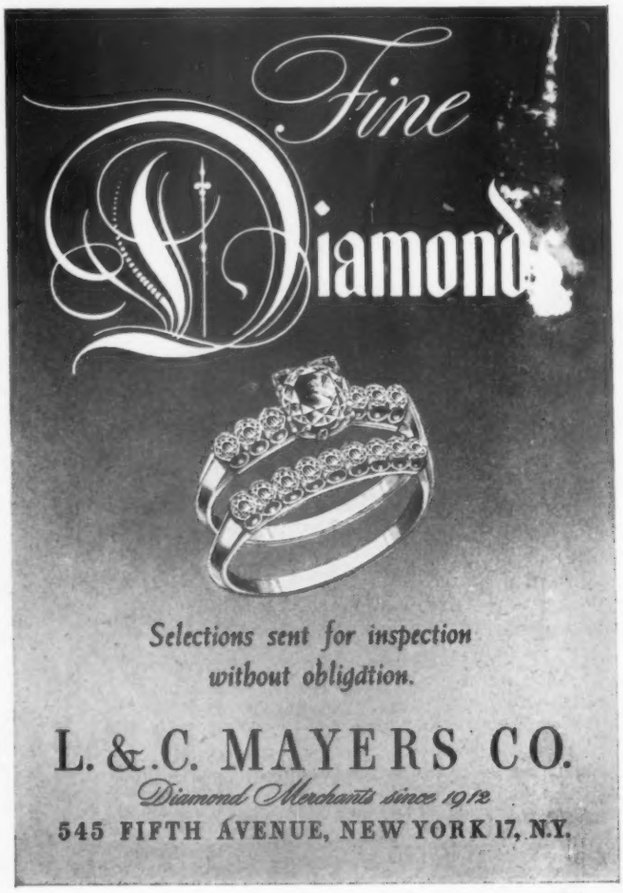
TEN tons of documents taken from the German Patent Office are now being sorted and evaluated and will eventually be disseminated for the benefit of American science and industry, according to Casper W. Ooms, Commissioner of Patents, Department of Commerce.

Originally seized by the United States Army in Germany, the documents were shipped to Wright Field in 146 packing cases. Army authorities then turned the documents over to the Office of the Publication Board, Department of Commerce, for dissemination to the public through its facilities. The United States Patent Office and OPB are cooperating in sorting and evaluating the documents.

Prior to 1939 patent information was regularly exchanged between Germany and this country, Mr. Ooms said. Since then, however, thousands of German patents have been issued of which we have no knowledge. It is in this file of patents issued during the war that is of particular interest to the United States Patent Office, Mr. Ooms said, and many of these patents will be placed on file in the Patent Office Search Room for public use.

At the same time OPB will bring the documents to the attention of the American public. Each document selected as worthwhile will be abstracted and listed in OPB's weekly "Bibliography of Scientific and Industrial Reports," which is available on subscription from the Superintendent of Documents.

After the German patent documents have been sorted and evaluated, those not selected for retention in the Patent Office will be returned to Germany.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TIME EXPOSURE, PARK AVENUE AT DUSK, BY LEON DE VOS

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BUSINESS FORMS get things done —particularly if they are color-keyed for action. Using color to identify each page of a multiple form speeds identification, gets it to its destination faster, simplifies handling and filing.

Today, millions of business forms are printed on HOWARD BOND, available in *whitest* white and in many clear, clean colors. It is a quality bond—so fine, in fact, that it is also a favorite letterhead paper. Thanks to wide distribution it is quickly available everywhere. Say "HOWARD BOND" for letterheads and business forms.

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HOWARD BOND

"THE NATION'S BUSINESS PAPER"

Soothing the Savage P. A.

"I GIVE UP!" snarled the purchasing agent. "I have had enough. On top of everything else, this is the last straw!"

"What is?" I asked, trying to be helpful as a printer should be.

"Paper is. That's what is! Forms and business letterheads. The Chief wants to economize and, at the same time, get a bond that's serviceable, too. I'm just a *second-rate* genius—can't do both, y'know!"

"Fact is, friend, you *can*. Take a reading on this sheet which I happen to have here. Try it with pen, pencil or typewriter. Get your gal to make some carbons. Erase it. Then – and hold onto your hat – look at that watermark. And economical? Check these figures and be amazed!"

He did and he was and the three of us—the P. A., the Chief and I—are just like that! (That's me on top of a nice order!) The wonder bond?

You guessed it!

Maxwell Bond

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MAXWELL PAPER COMPANY DIVISION
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LIQUID PLASTIC PADDING GLUE

Countless tests in large and small print shops and binderies were conducted by the manufacturers of Pliatab Cold Padding Glue in order to obtain a formula which would have long storage life and permanent flexibility.

As a result of experiments with synthetic rubber, resins, animal glues, etc., as a raw material base, Paisley Products selected a liquid plastic synthetic resin for the Pliatab formula because of its resistance to extremes of temperature and climatic conditions. The raw material, a war born plastic resin, was released by the War Production Board for civilian use at the end of the war.

One gallon of Pliatab will cover 200 square feet of padding area

The use of plasticizing agents overcomes crystallization, hardening and brittleness and also imparts greater covering qualities. The compound can be applied by hand brushing or spray gun, and is available in red and white (natural) colors.

Packings are quart and gallon jars, five and ten gallons steel pails, thirty and fifty-five gallons drums. Literature is available from the manufacturers, Paisley Products, Inc., Chicago 16, Illinois, or New York, 19 New York.

PUBLICITY RACKETS BEING REVIVED

Old publicity rackets are being revived all over the country, says the Timken *Executives Bulletin*. Most active right now in many industrial centers such as New York and Chicago is the "company history and personal biography" game. A sharp-shooter rents a temporary office and adopts a name which sounds like a news bureau or a research organization. He then telephones gullible businessmen saying he has been commissioned to gather and write stories for inclusion in newspaper morgues, libraries, and schools. There are many variations, but this background is typical. The victim "merely pays the cost of gathering the material" plus a round sum for a few thousand reprints. An old photograph racket is coming back, too. In this one, the businessman is usually told that some business publication wants his photograph or that proofs will be sent "without extra cost" to all newspapers and business papers. Of course, it would be nice if the victim bought a few glossy prints at $2 each and a dozen sepias at $75 a dozen.

NEED OFFICE HELP?

IF you are coping with the help problem these days, take a tip from the kitten—get **Stylewriter Ribbons.** Stylewriter's extra length means fewer ribbon changes—a saving of time for the busy secretary. And Stylewriter's fine weave means easier-to-read copies—a saving of time for the busy executive.

THE CARTER'S INK COMPANY

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Carbon and Ribbon Specialists

PERSONALITIES *in the* NEWS

F. Albert Hayes, for many years Purchasing Agent for the American Hide & Leather Co., and more recently production manager and assistant to the vice

president of that company, has been appointed to the newly created position of Director of Purchasing, Bigelow-Sanford Carpet Company, Inc., with headquarters at 140 Madison Avenue, New York City. Mr. Hayes is a past president of the National Association of Purchasing Agents, a past president of the New England Purchasing Agents Association, and at present is chairman of the N.A.P.A. Committee on Education. During the war he was Chief of the Leather Branch, Textile & Leather Bureau of the War Production board. William Murray, Purchasing Agent, and A. R. Showalter, wool buyer for Bigelow-Sanford, will continue in their present capacities under Mr. Hayes' direction.

Roy C. Haberkern has been elected a vice president of the R. J. Reynolds Tobacco Co., Winston-Salem, N. Carolina. Mr. Haberkern has been with the Reynolds Company 37 years, 26 of which he has been head of the Purchasing department, and 23 years as a member of the board of directors. Mr. Haberkern is a past president of the National Association of Purchasing Agents,

(1942-1943) and a former vice president of District No. 8 of the NAPA. He is a recipient of the Thomas Award for Meritorious Service in the Field of Purchasing (1940). He also was honored with the Distinguished Service Award of the City of Winston-Salem for Meritorious, Unselfish and Distinguished Community Service.

Alfred D. Nutter, Jr., has been appointed Purchasing Agent for the glass division of the Pittsburgh Plate Glass Company, Pittsburgh, Pa., succeeding H. M. Hoffman who has retired after 35 years of service. M. E. Carlisle is General Purchasing Agent.

Brig. Gen. Albert J. Browning was recently appointed Director of Purchases, Ford Motor Company, with headquarters in Dearborn, Michigan. He succeeds Charles H. Carroll, former Director of Purchases, who has been made assistant general manager of the Ford Company's low-priced car division.

During the war Mr. Browning was in charge of purchasing for the War De-

partment. Before entering Government service he had been merchandise manager for Montgomery Ward & Co., and later was president of United Wallpaper Factories, Inc. In 1940 he went to Washington as assistant to Donald Nelson, at that time coordinator of purchases for the advisory commission to the Council of National Defense. With the establishment of the Office of Production Management he became its deputy director of purchases. He was placed in charge of the Army's purchasing program in January 1942.

Robert B. Burwell has been named Purchasing Agent for the West Central District of the Westinghouse Electric Supply Company, Columbus, Ohio. Mr. Burwell was connected with the Pixley Electric Company in Columbus from 1942 until that concern was purchased by Westinghouse last year. He served as branch stores manager until accepting his present post as district Purchasing Agent. He is a member of the Purchasing Agents Association of Columbus.

J. E. McWilliams has been appointed General Purchasing Agent, Blaw-Knox Company, Pittsburgh, Pa. He has been with the company for the past 26 years,

and until his present appointment was Purchasing Agent of the Blaw-Knox Division. He succeeds the late Walter Nuttall who passed away May 3rd.

Arthur G. Pearson has resigned as Director of the Purchasing Department of the National Broadcasting Company, Chicago, to become associated with the American Meat Institute's Department of Purchasing Practice, of which Harry L. Osman is Director. Mr. Pearson, who is president of the Purchasing Agents Association of Chicago, also teaches courses in purchasing principles and practice at both Northwestern University and the Illinois Institute of Technology. He was with the National Broadcasting Co., Chicago, for twelve years in an executive capacity.

Clark Maxon, formerly Assistant General Purchasing Agent of The Glidden Company, Cleveland, Ohio, succeeds John M. Stadter as General Purchasing Agent. Mr. Stadter has been promoted to the position of assistant general sales

manager of the Chemical and Pigment Division. He entered the employ of the Glidden Company 26 years ago as a stenographer at the company's Chemical

(*Continued on page 288*)

Your
Decal NAMEPLATE Selector
is ready for mailing
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"There's a Meyercord Decal for every kind of commercial surface"

THIS PRACTICAL "SLIDE-RULE"
WILL HELP YOU SELECT THE RIGHT

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33 Greene Street, New York 13

SPECIALISTS in STAINLESS FASTENERS

(*Continued from page 286*)

and Pigment Division in Baltimore. He became traffic manager and Purchasing Agent at the Baltimore plant and, in 1934, was put in charge of paint purchases for the paint Division at Cleveland, later becoming General Purchasing

John M. Stadter

Agent for the company, Mr. Maxson joined the Glidden Company 12 years ago as a salesman for the Forest City Paint & Varnish Co., a subsidiary. For the past nine years he has served as assistant to Mr. Stadter.

Lorenzo M. Rector has been named Assistant Purchasing Agent, Gabriel Steel Company, Detroit, Mich. He has been in the company's service for the past 25 years.

J. W. Moore succeeds G. W. Jansen as Purchasing Agent for the Burgess-Norton Manufacturing Co., Geneva, Illinois. Mr. Jansen resigned to become general manager of the Tube Corporation, Chicago, Ill.

Howard Messmore has returned to his position as Purchasing Agent for the Servicized Products Company, Chicago, Ill., after some three years army service in the quartermaster and ordnance departments.

Walter H. Kuehnl has been appointed Purchasing Agent for the Stainless Steel Products Co., St. Paul, Minn.

Thorpe Wesley Wright is now Purchasing Agent for the Ward LaFrance Truck Division, Great American Industries, Inc., Elmira, New York. He replaces Charles C. Albertson who has become production manager of the Corbitt Co. of Henderson, N. C. Mr. Wright previously was Purchasing Agent for the Chicago Pneumatic Tool Co., Garfield, N. J.—since 1942, and previous to that was connected with American Water Works and Electric Company, New York, N. Y.

Col. Herbert A. Gardner has been placed in command of the Army quartermaster purchasing office, New York City, succeeding Col. Thomas W. Jones who is retiring after 35 years of service to enter the textile field as president of the newly organized Thomas W. Jones Woolen Company. Distributing office of this company will be in Cincinnati, though Colonel Jones will be located in New York. Colonel Gardner entered the Army as captain during World War I. During World War II he served in Australia as president of the American Purchasing Committee, general purchasing agent for United States forces, chief of procurement for GMC, and director of procurement for Service of Supply. He returned to Washington in 1944 as Washington Liasion officer of the Southwest Pacific forces.

Arthur J. Hermann has been appointed Assistant Purchasing Agent, Sun Chemical Corporation, New York. For the past ten years he has been assistant general manager in charge of manufacturing operations for the Rutherford Machinery Company Division of Sun Chemical Corporation.

W. R. Peterson has been named manager and Purchasing Agent of the Dallas, Tex. branch of Barada & Page, Inc., Kansas City, Mo., agricultural and industrial chemicals. He has been with the company for ten years, starting at the Kansas City headquarters and later being transferred to the Tulsa, Oklahoma branch, and then to the Oklahoma City branch. He succeeds L. S. Allen at Dallas, the latter having resigned.

R. Bostwick, Purchasing Agent, Chicago, Indianapolis & Louisville Railway, announces that the Purchasing Department has been moved from Chicago to the Monon shops at Lafayette, Indiana.

James E. Romar, recently released from duty as a captain in the Army Air Transport Command, has rejoined East-

ern Air Lines and has resumed duties in charge of the New York City Purchasing office for the company. Mr. Romar, who joined the air line in 1936 served with the ATC on assignments in New York City, Washington, D. C., Miami, Fla., Ireland supply bases and Paris, France.

Bernice Wood, former president of the Women's Division of the Purchasing Agents Association of Washington, Seattle, Wash., who is now purchasing for UNRRA, with headquarters in the Embankment building, 370 North Soochow Road, Shanghai, China, states that she finds the work there most interesting, stating that "Here is the place one can be a real P. A., for so many things are needed." And she writes, "If you have

(*Continued on page 290*)

VALDURA
Take the High Road to RUST-PROOF PROTECTION
Weatherproof with VALDURA IMPROVED ASPHALT PAINT
Without adequate surface protection from salt sea air and weather, the majestic spans over tide-water would eventually crumble into the sea.
For tough, heavy duty jobs like this, indoors or out — above or below ground, industrial maintenance experts for thirty years have preferred Valdura Improved Asphalt Paint.
Valdura's tough, lasting film of protection is unaffected by extremes of temperature, smoke, fumes, moisture, brine, acid or alkali conditions. It offers a dependable "high road" to low-cost maintenance.
Write department 622 today for a color card showing Valdura's advantages.
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PAINTS THAT ENDURE
AMERICAN-MARIETTA COMPANY
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H-VW-M

PLATING BARRELS

Now plating thousands of parts that used to be racked or wired

More and more platers are finding that many parts that "had to be" racked or wired *don't* have to be at all! They've found that H-VW-M Mercil Type Plating Barrels *can* do the job in many cases...and do it faster and cheaper.

Patented design features of H-VW-M Barrels add up to: Constant Application of Current to Work Minimum Current Waste • Minimum Treeing • H-VW-M Plating Barrels plate faster than any other type, plate more work per ampere.

1243

Another reason you can expect more from H-VW-M Plating Barrels is this: They are not manufactured to a set pattern. Each is designed for top efficiency under the conditions in which it will be used. They are designed by men thoroughly familiar with plating-room practice. Call in one of these men on that tough small parts plating job of *yours*. Or write for Bulletin PB-106.

HANSON-VAN WINKLE-MUNNING CO.
MATAWAN, NEW JERSEY
Manufacturers of a complete line of electroplating and polishing equipment and supplies
Plants: Matawan, New Jersey • Anderson, Indiana
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HANSON-VAN WINKLE-MUNNING CO. MATAWAN, NEW JERSEY U.S.A. SINCE 1870

REPORT TO SAFETY DEPARTMENT
NAME- John J. Smith
DEPARTMENT- Maintenance
DETAILS OF ACCIDENT - While sawing overhead, the blade broke, Employee fell from the ladder injuring his ankle
Dept. Mgr.
PREVENT ACCIDENTS TO YOUR MEN
REPORT TO SAFETY DEPARTMENT
NAME- Wm. H. Brown
DEPARTMENT- 38-L
DETAILS OF ACCIDENT-Hand hack saw blade broke while cutting pipe. A piece of the blade drove into his hand, which resulted in a bad cut.
Foreman

THE SAFETY HAND BLADE SENSATION

BREAKAGE ELIMINATED. Inasmuch as this is an unbreakable blade it will withstand hard usage, even misuse, without shattering. Sharp twists and kinks, which are the main reason for saw breakage, are absorbed without damaging this blade.

LENOX Hackmaster

"LENOX"

Hackmaster

AMERICAN SAW & MFG. CO. SPRINGFIELD 1, MASS.

(*Continued from page 288*)

any brainstorms or friends who want agencies, have them drop me a line."

Wendell J. Tobey joined the Sanborn Company, Cambridge, Mass., makers of electronic-mechanical instruments, as Purchasing Agent, the latter part of February of this year.

Thomas Reed Daugherty has returned from naval service to his former position of Purchasing Agent for Ernest F. Donley's Sons, Inc., Cleveland, Ohio.

Harold W. Jones suceeds William Hassink, Jr., as Purchasing Agent for the Bissett Steel Company, Cleveland, Ohio.

Dale Canata, Purchasing Agent for the Crocker First National Bank of San Francisco, Calif., was recently presented with a gold watch in recognition of his quarter-century of service with the bank.

H. W. Wolff has been elected Vice President in Charge of Purchasing of Westinghouse Air Brake Co., Wilmerding, Pa., and Union Switch & Signal Co., Swissvale Pa. He had been director of

purchasing. Mr. Wolff was identified with the Hall Switch & Signal Co. for 25 years before that company was acquired by Union Switch & Signal Co. in 1925. He had been general manager, treasurer and member of the board of directors of the Hall organization from 1915 to 1925. During his first ten years with Union Switch & Signal Co. he had various executive duties, for a period serving as manager and director of the Union-Westinghouse Battery Co. In 1937 he was appointed assistant director of purchasing of both the air brake and switch and signal companies, and in 1939 was named Director of Purchases.

H. van der Gaast has been appointed General Purchasing Agent for Taca Airways, representing Taca Airlines of Central and South America, with headquarters in Miami.

Clyde Whitaker of Amarillo, Tex., has been named Purchasing Agent for Potter County, succeeding Curtis Wescoat, resigned. Mr. Whitaker formerly was Purchasing Agent for the McKnight Construction Company, road builders.

E. J. Maag has been named Purchasing Agent for the Columbia Recording Cor-

(*Continued on page 294*)

COMMON SENSE ASSEMBLY ENGINEERING

Cuts Unit Assembly Cost 8¼¢... Greatly Improves Product

BEFORE Enameled steel knob on bracket of old model "Quintuplet" Can Opener cost 4½¢ to 5¢ ... two large and two small special bracket rivets 1⅔¢ each. On opener, turning handle was soldered to cutter wheel, prevented easy replacement. TOTAL ASSEMBLY COST 11¢.

AFTER Plastic Knob (2½¢) replaced steel knob. Attached with P-K Hex Head Type "Z" Self-tapping Screw, which also serves as locking and locating device, eliminating one large bracket rivet. Improved, detachable crank handle on opener is fastened by two Hex Washer Head Type "Z" screws, making replacement of cutting gear easy. One Hex Head Type "Z" Screw attaches second plastic knob to crank handle. Screws are driven with a power press driver. TOTAL ASSEMBLY COST 2¾¢.

Here's a case where "looks" belie the facts. The new model "Quintuplet" Can Opener made by the Cahil Manufacturing Company *looks* like a costlier assembly job than the old one – but it isn't. It's 8¼¢ cheaper, thanks to common sense assembly engineering and P-K Self-tapping Screws.

By eliminating hand operations and high cost special parts, and by combining the functions of other parts, P-K Assembly Engineers helped this company achieve "an outstanding improvement in the product from the user's standpoint, plus considerable savings in time, labor, and material" according to Mr. J. A. Cahil, President.

Such savings are not uncommon where Parker-Kalon fastenings are used – they often run as high as 30% to 50% through the elimination of needless tapping, bolting, riveting, and inserts.

Can you apply these benefits in your assemblies? In seven out of ten assembly jobs submitted to us, the answer is "Yes". A P-K Assembly Engineer will call and help you find all possible savings – or, mail assembly details for recommendations. Parker-Kalon Corp., 200 Varick Street, New York 14, N. Y.

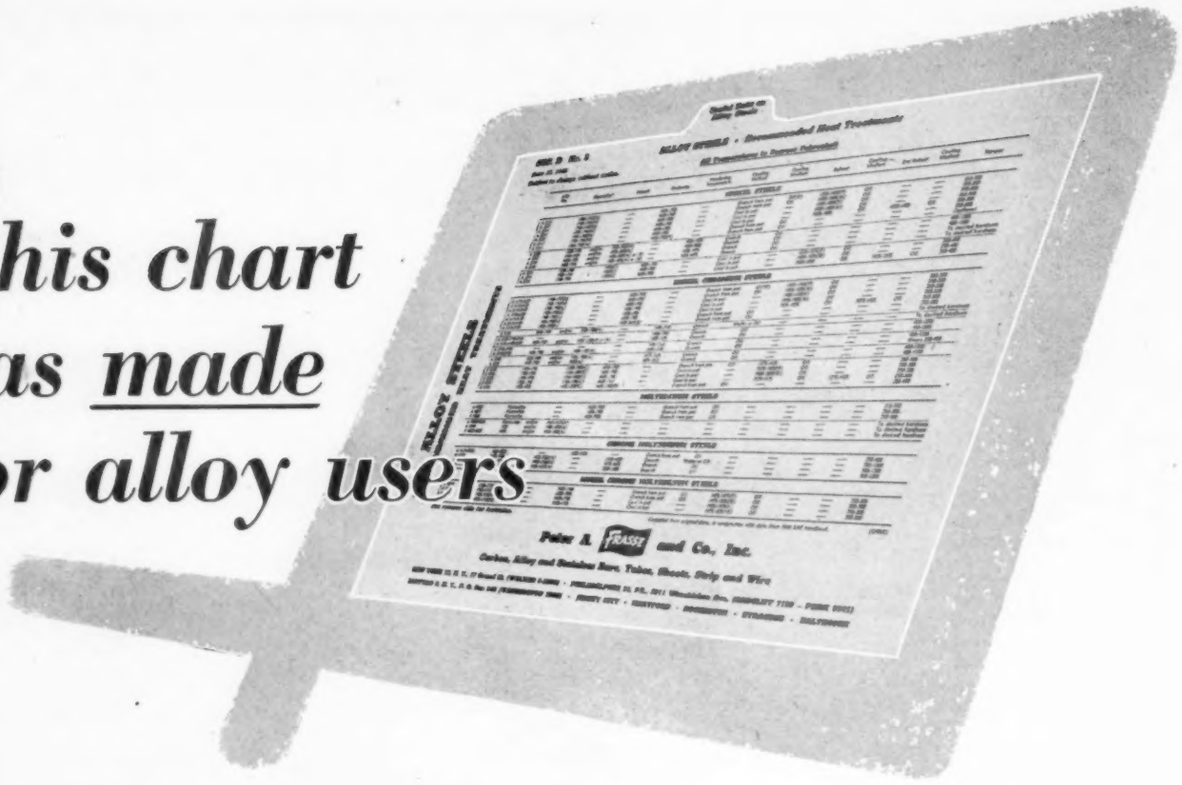
SOLD ONLY THROUGH ACCREDITED P-K DISTRIBUTORS

P-K

PARKER - KALON SELF-TAPPING SCREWS

FOR EVERY METAL AND PLASTIC ASSEMBLY

This chart was made for alloy users



In this new chart, Frasse has *condensed* alloy heat treat procedure to a *single* file size card. With it, you can check heat treatment for any one of 60 standard steels — in 30 seconds flat!

How is 4615 treated for automatic quenching? What's the normalizing temperature for 4130 . . . the recommended cooling rate for annealing 6145? With this new chart, you can answer hundreds of similar questions with *speed* and ease.

The single card gives all salient data for normalizing, annealing, hardening, carburizing and reheat. Shows recommended cooling medium, tempering ranges and precautions to follow. Slip it under glass or tack it on the wall — and you have alloy heat treatment summarized at a glance!

Here's a handy checking tool for metallurgists and heat treaters . . . an invaluable guide for technically-minded buyers. Before you mislay the coupon—mail it for your free copy today!

Peter A. FRASSE & Co., Inc. 43A
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A 3135
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A 4150
X 4340
A 4615
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A 8620
NE 8630
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Over 1500 Brushes

AT YOUR *finger tips*

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Know your brushes
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THIS MILFORD FLEXIBLE REZISTOR!

SAFE...
Replaces all hard blades for all users . . . skilled or unskilled

ECONOMICAL...
Delivers full cutting life . . . no accidental breakage

- **Cannot break or shatter in the frame.**
- **Faster and greater production per blade.**
- **Made from a new high-speed steel for longer cutting life. Only the teeth are hardened . . . the back is tough and flexible.**

Plus

"EASY-STARTING TEETH" IN ALL HAND SIZES . . . EXCLUSIVELY MILFORD.

Order from your mill supply distributor. He is always ready to serve your needs for all factory and mill supplies, as well as Milford hack saw and band saw blades.

MILFORD FLEXIBLE REZISTOR is the answer to your HACK SAW cutting problems

MILFORD
PROFILE AND BAND SAW BLADES
REZISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.
Saw Specialists Exclusively for Over 65 Years
NEW HAVEN 5, CONNECTICUT, U. S. A.

(*Continued from page* 290)

poration's King Mills, Ohio plant, according to announcement by R. P. Robinson, Jr., Director of Purchases Bridgeport, Conn. Mr. Maag was formerly a buyer for the Peters Cartridge Co., whose plant Columbia purchased in Kings Mills.

Robert P. Robinson, Jr., has been appointed Director of Purchases for Columbia Recording Corp. New York. He formerly was buyer for Remington Arms Company.

George A. Fay has been appointed Assistant Purchasing Agent for the Addressograph-Multigraph Corp., Cleveland,

Ohio, according to announcement by S. H. Mansfield, head of the purchasing department. Mr. Fay, who is chairman of the educational committee of the Purchasing Agents Association of Cleveland, was formerly associated with the purchasing departments of Geometric Stamping Company and the Ohio Rubber Company.

John Lembach has been appointed Purchasing Agent for the Florida East Coast Railway Company, with headquarters at 120 Broadway, New York, N. Y. He succeeds C. D. Boice, deceased.

Donald D. Pascal, manager of the Midwestern Division of the National Starch Products Inc., has been elected an assistant vice president.

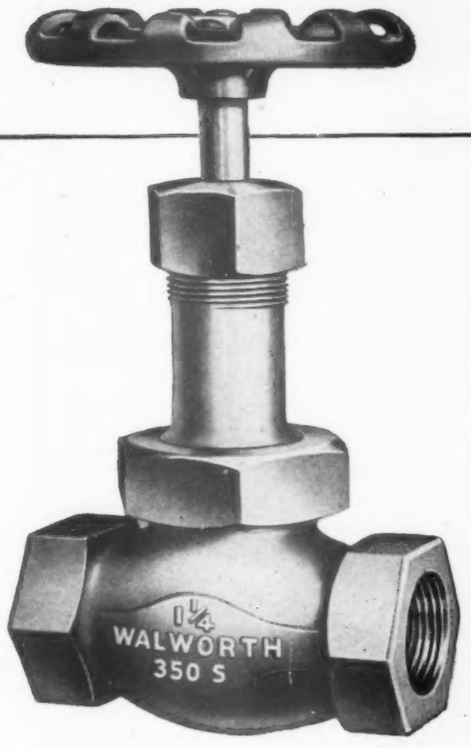
Don G. Mitchell has been elected president of Sylvania Electric Products, Inc. He formerly was an executive vice pres-

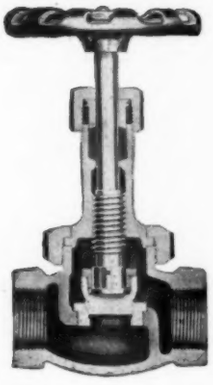
ident. At the age of 41, Mr. Mitchell becomes one of the country's youngest presidents of a major corporation.

Follansbee Metal Warehouses is the name of new division of Follansbee Steel Corp., Pittsburgh, in which has been

(*Continued on page* 296)

The longest wearing bronze valve YOU CAN BUY!





Walworth No. 225P with 500 Brinell Seats and Discs

With stainless steel seats and discs, heat treated to a hardness of 500 Brinell, this quality valve assures tight positive shut-off even after years of severe service. Boiler scale, sand, slag and similar flotage will not injure the seats and discs . . . which are hard enough to crush nails and scratch glass.

Further, No. 225P's union bonnet type construction, deep stuffing boxes, oversize stems and sturdy bronze bodies provides additional protection against wear and leakage. The valve may be repacked under pressure, when fully opened.

This exceptional valve is available in sizes from ¼" to 2", and is recommended for 350 pounds superheated steam pressure, maximum temperature 550F, and 1000 pounds non-shock service on cold water, oil, gas or air. This valve in the angle type (No. 227P) is also available.

For full data about the Walworth No. 225P, see your nearby Walworth distributor, or write for Catalog No. 42.

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60 East 42nd Street, New York 17, N. Y.

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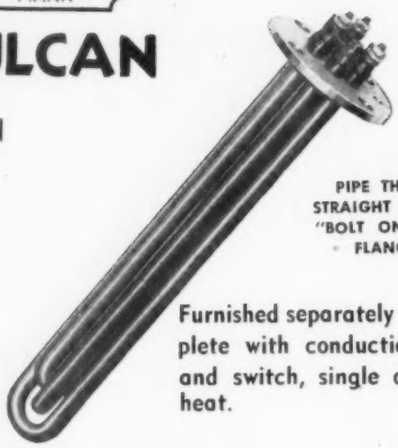
VULCAN

IMMERSION HEATING UNITS

Complete with gaskets, terminal cover, etc.



PIPE THREAD
STRAIGHT THREAD
"BOLT ON" TYPE
FLANGES

Furnished separately or complete with conduction cord and switch, single or three heat.

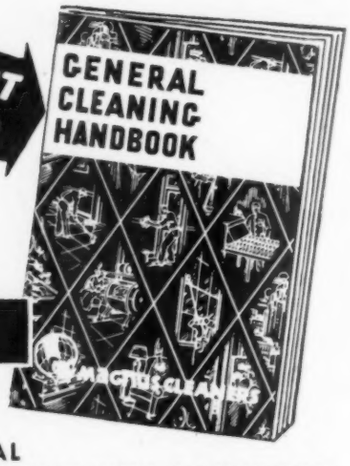
Single and three heat, with various metal casings, as required for heating water, oils, paraffin, chemicals, etc.

VULCAN ELECTRIC COMPANY
DANVERS 1, MASS.

Makers of a wide variety of Heating Elements for assembly into manufacturers' own products and of Heating Specialties that use electricity.

HOW-AND-WHY-TO-DO-IT DATA ON CLEANING

AUTOMOTIVE
AVIATION
BUILDINGS
BUS & TRUCK FLEETS
FOOD PRODUCTS
METAL PRODUCTS
PAPER MILLS
PETROLEUM
RAILROADS



A TYPICAL MAGNUS CLEANING HANDBOOK

like the one shown above, covering all the cleaning problems of the modern building, is an authoritative and complete manual on methods, materials and machines for use in each of the cleaning jobs which must be carried on by the industry concerned. There are Magnus Handbooks for paper mills, railroads, metal products, petroleum, bakeries, food plants, dairies, aviation, truck and bus fleets and automotive service shops. The practical ideas they contain will help you cut costs and improve cleaning.

WRITE FOR YOUR MANUALS

1921-1946 TWENTY-FIVE YEARS OF SERVICE TO INDUSTRY

MAGNUS CHEMICAL CO. 93 SOUTH AVE., GARWOOD, N. J.

MAGNUS Cleaners • Methods • Machines

(*Continued from page* 294)

consolidated the present warehousing services of the corporation. The change is made to establish the identity and services of the warehouses separately from the corporation's steel production activities. Present warehouses are in Pittsburgh and Rochester, N. Y.

Quaker Chemical Products Corp., Conshohocken, Pa., announces appointment of John W. Burley, Jr., formerly special technical advisor in Tools Branch Machine Tool Section of WPB., as a member of its technical sales force.

Consolidated Industries, Inc., Lafayette, Ind. Announcement is made that Vernon L. Beery is now in charge of field service and installation in the stoker division.

Foote Bros. Gear & Machine Corp., West Coast service: Announcement is made of the appointment of Irving C. Maust to West Coast sales engineering staff in the Pasadena office.

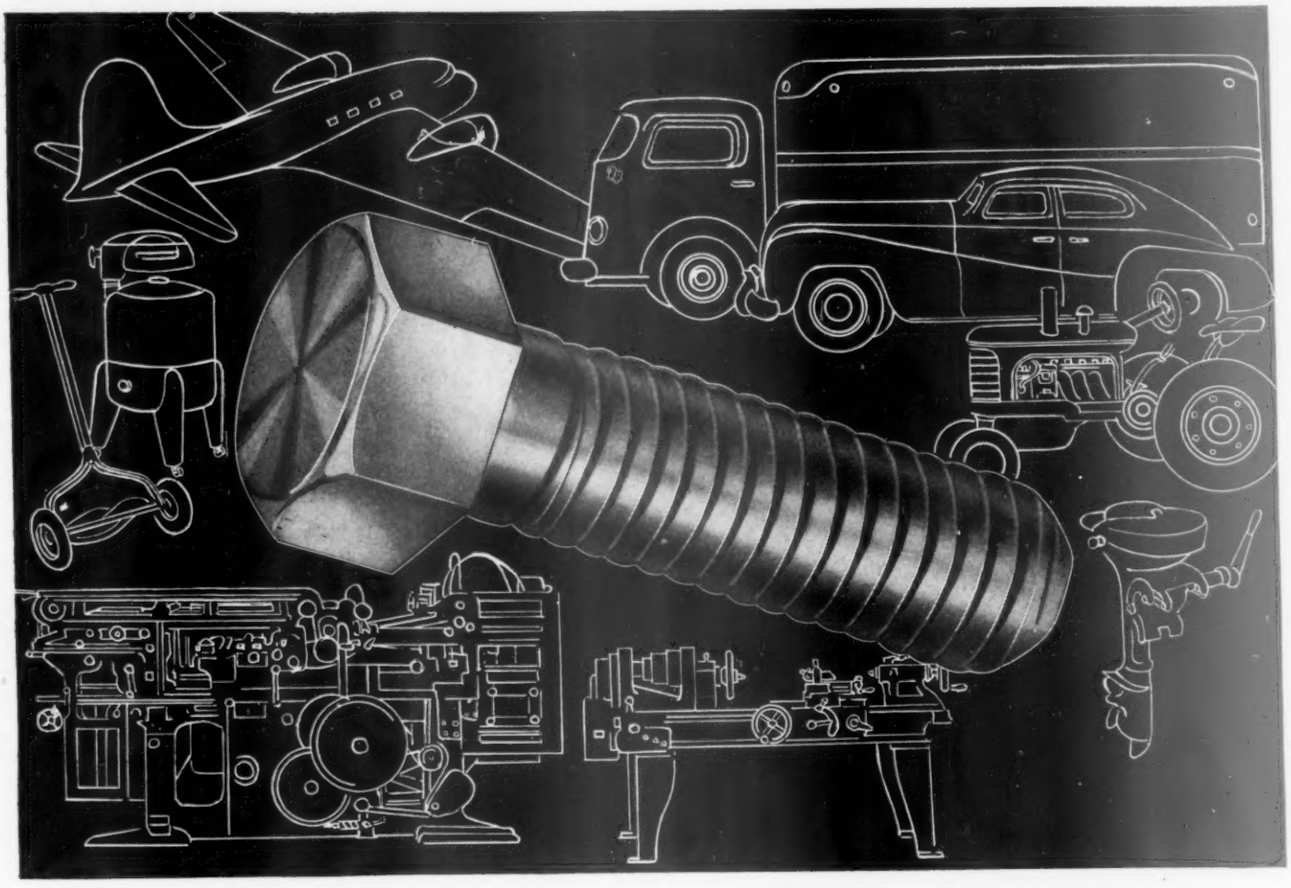
Turco Products, New Mexico territory: Robert K. Yeck has been named Technical Service representative for New Mexico, offices and warehouse facilities having been established at 200 Korber Building, Albuquerque.

W. G. Warnock has been named Manager of newly created Materials Department, of Mid-Continent Petroleum Corporation, Tulsa, Okla. The new set-up combines the former general purchasing department and the priorities and inventory control department into one with three divisions—Purchasing, Priorities, and Inventories and Materials.

Mr. Warnock, who began his career with Mid-Continent in November 1915 in the engineering and experimental department at the Cosden Refinery, has been manager of the priorities and inventory control department since November 1941. Before that date he was construction engineer of the marketing divisions. A graduate of the Sheffield Scientific School of Yale University, he is well known in oil, engineering and materials circles. The priorities division of the new department will be directly under his supervision.

Advance Pressure Castings, Inc., New Jersey territory: Philip G. Nase has been appointed to the New Jersey territory with headquarters at Caldwell, N. J.

(*Continued on page* 298)



JUSTIFIABLY FAMOUS

FERRY Shinyheads

Add value to your product by specifying the *justifiably famous* line of Shinyheads, securing extra sales appeal and extra quality.

Here's character which you can distinguish at a glance:

Hexagon heads—full finished—completely machined—top and bottom . . . bearing surface washer faced.

Top of head chamfered . . . sides parallel and smooth, mirror-finish. Clean-cut and precise.

Threads uniform and accurate to close tolerance dimensions for perfect fit to standard gauges.

More and more buyers simply specify Shinyheads. *Justifiably famous*—Shinyheads have earned the reputation as *"America's best looking cap screw"*—they are also America's most popular cap screw.

The FERRY CAP & SET SCREW Co.

2165 SCRANTON ROAD • • • • • CLEVELAND 13, OHIO

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

When You Want a shipment to go the fastest way, the word "rush" is not enough. Specify "Air Express" and be sure.

Phone For Pick-Up as soon as package is ready. Special delivery at other end often means same-day delivery between many airport towns and cities as far as 1,000 miles apart.

Air Express goes everywhere. In addition to 375 airport towns and cities, it goes by rapid air-rail schedules to 23,000 other communities in this country. Service direct by air to and from scores of foreign countries in the world's best planes, giving the world's best service.

RATES CUT 22% SINCE 1943 (U. S. A.)					
AIR MILES	2 lbs.	5 lbs.	25 lbs.	40 lbs.	Over 40 lbs. Cents per lb.
149	$1.00	$1.00	$1.00	$1.23	3.07c
349	1.02	1.18	2.30	3.68	9.21c
549	1.07	1.42	3.84	6.14	15.35c
1049	1.17	1.98	7.68	12.28	30.70c
2349	1.45	3.53	17.65	28.24	70.61c
Over 2350	1.47	3.68	18.42	29.47	73.68c
INTERNATIONAL RATES ALSO REDUCED					

Write Today for the Time and Rate Schedule on Air Express. It contains illuminating facts to help you solve many a shipping problem. Air Express Division, Railway Express Agency, 230 Park Avenue, New York 17, N.Y. Or ask for it at any Airline or Railway Express office.

AIR EXPRESS
GETS THERE FIRST

Phone AIR EXPRESS DIVISION, RAILWAY EXPRESS AGENCY
Representing the AIRLINES of the United States

(*Continued from page 296*)

S. L. Gilliam, company Purchasing Agent since January, 1941, will continue in that capacity as head of the Purchasing Division. Buyers are: J. R. Stockton, refining; C. W. Wallace, Production and Pipeline; and K. E. Matheny, marketing. J. Rex Wolfe, former assistant to Mr. Warnock in the priorities and inventory control department has been appointed superintendent of the inventories and materials division. Company field warehouses in production, pipe line, gasoline, motor transport and marketing, will be under his direct supervision.

J. L. McBride has been named District Purchasing Agent for Southern California for the Bethlehem Pacific Coast Steel Corporation, with headquarters at plant of the corporation in Vernon, California.

U. S. Broach Co., New England territory: Arthur A. Cambria, chief engineer with the LaPointe Machine Tool Co. for the past eight years, has been appointed N. E. district manager with office at Shrewsbury, Mass.

W. S. Price, major in Quartermaster Department, has resumed his former position as manager of the Educational & Institutional Cooperative Service, Inc., Educational Buyers Association. He entered the Armed Services in April

1942 and served in England, France, Belgium and Holland, and was released from service in March of this year. Mrs. Ella Carson who was in charge of the Services during his absence, is assistant manager.

A. C. Ericksen has been transferred from the Cairo, Ill. plant of Thomas A. Edison, Inc., to assume duties as Divisional Purchasing Agent at the Edison Plant at Kearny, N. J., where storage batteries are manufactured. Mr. Ericksen handled Edison purchasing at Cairo during the war before which he was connected with the Edison Purchasing department at West Orange, N. J.

P. F. Lodewyks has been named Purchasing Agent and plant engineer, Broderick & Bascom Rope Co., Seattle, succeeding W. J. Hannon who has been transferred to the sales department.

Harold E. Ridalls, former Purchasing Agent for the Pacific Car & Foundry Company, Seattle, Wash. has been appointed general manager of the company's motor coach division. E. L. Ben-

(*Continued on page 300*)

PERMANENT MAGNETS • MAY DO IT BETTER

Photograph of a fragment of Alnico V

(This is the third of three advertisements regarding permanent magnet materials)

What is your magnet made of?

ALNICO V

If your product requires a permanent magnet that develops the maximum magnetic energy in limited space and weight, Alnico V is the solution. It is the newest and "strongest" of the Alnicos, the aluminum-nickel-cobalt-iron permanent magnet alloys. Its store of magnetic energy is about five times that of cobalt magnet steel and three times that of the other grades of Alnico. Of the permanent magnet materials commercially available, it is highest in residual induction as well as available energy. Like the other Alnicos, No. V is hard, brittle, non-forgeable and non-machinable and is formed by casting.

The improved permanent magnet characteristics of Alnico V are obtained by using a higher percentage of cobalt and lower percentages of the other elements and a new heat treatment. The treatment consists of normalizing at a much higher temperature than with the other grades, cooling in a magnetic field parallel to the field in the finished magnet and annealing for several hours.

Utilization of the maximum available energy requires that both magnet and magnetic circuit be designed with expert consideration of the magnetic characteristics of Alnico V. For over 35 years, this company has specialized in permanent magnet engineering and production. We invite the consultation of manufacturers who have problems in the use or application of permanent magnets. Write for free technical handbook: *Permanent Magnet Manual.*

★ ★ ★ **THE INDIANA STEEL PRODUCTS COMPANY** ★ ★ ★

6 NORTH MICHIGAN AVENUE, CHICAGO 2, ILLINOIS

Copr. 1945, The Indiana Steel Products Co.

SPECIALISTS IN PERMANENT MAGNETS SINCE 1910

SHANTIES ARE OUT OF STYLE

It's good business to keep your small utility buildings out of the shanty class. You can do it at low cost and get much better structures by specifying standard ARMCO STEELOX Buildings.

This way your utility buildings, tool houses, and other buildings have the two big advantages of a permanent structure — long life and low upkeep — plus easy portability should conditions change. They can be taken down and reassembled in another location as many times as you wish.

STEELOX Buildings are adaptable to many requirements. They can be quickly wired, easily insulated, or may be left uninsulated without affecting weather-tightness. All-steel construction is an excellent fire-barrier, while interlocking joints help keep out dust and vermin. The galvanized PAINTGRIP surface of STEELOX can be painted immediately — assures long paint life.

STEELOX Buildings are prefabricated in a wide range of standard sizes. They are easy to handle and are erected quickly by unskilled labor.

Write for prices and complete information on standard ARMCO STEELOX Buildings. Armco Drainage & Metal Products, Inc., and Associated Companies, 2905 Curtis Street, Middletown, Ohio.

ARMCO STEELOX BUILDINGS

(*Continued from page* 298)

nett, storekeeper, succeeds him as Purchasing Agent.

John J. Holmes has been named Purchasing Agent for Timber Structures, Inc., Seattle, Wash. Formerly he was chief buyer for U. S. Engineers in Seattle, and more recently associated with the War Assets Corporation in sales work.

Patrick J. McCue succeeds Herbert J. Dobb as Purchasing Agent for Schwabacher Bros. & Co., Inc., Seattle, Wash. who is now general manager for that company. Mr. Dobb had been an active member of the Purchasing Agents Association of Washington for 22 years, in token of which he was elected an honorary member of the association.

George A. Dickie, Purchasing Agent for the General Tool Co., Portland, Ore., was born in NA P A, Calif., according to the *Oregon Purchasing News*, which states that the association now has two George Dickies on its roster. The other is George L. Dickie who is purchasing agent for the First National Bank of Portland.

Lieut. H. Mutispaugh has been discharged from the Armed Services and is returning to Rollins College, Winter Park, Fla., as Purchasing Agent and Assistant

Business Manager. He joined the Services as private in 1943 and earned commission as first lieutenant in procurement work with Springfield Ordnance District, Springfield, Mass. He has been at Rollins College for 13 years.

CORRECTION

Kenneth M. Reed, Chief Purchasing Agent, The Mutual Benefit Life Insurance Co., Newark, N. J. has been elected an officer of the company by the Board of Directors, and not a member of the board as stated in these columns in May issue of *Purchasing*.

Walter Nuttall, General Purchasing Agent of the Blaw-Knox Co., Pittsburgh, Pa., passed away May 3rd. He had been with the Blaw-Knox Company for 26 years and was a member of the Purchasing Agents Association of Pitts-

George S. Hayes, Director and Purchasing Agent of The Okonite Company, Passaic, N.J., passed away May 3rd. Mr. Hayes, who joined the purchasing department of the Okonite Company in 1911, was 81 years old. He was appointed Purchasing Agent in 1918, and in 1923 was elected a director of the company.

AMONG THE COMPANIES YOU BUY FROM

Graybar Electric Co., New York, N. Y. Three new offices and warehouses have been opened as follows: **Wilmington,** Del., L. E. McIntyre, manager, 1005-1007 West Fourth Street; Amarillo, Tex., L. P. Bell, manager, 701 East Third Avenue; Jackson, Miss., A. N. Saxon manager 758 Ricks Street.

Titan Metal Manufacturing Co., Bellefonte, Pa. Ralph H. Lightner has been named

general sales manager to succeed J. B. Craig, vice-president, who has been appointed controller.

General Tire & Rubber Co., St. Louis, Mo. F. D. Gillen has been assigned the responsibility of directing sales to manufacturers. He will handle sales of all products to motor truck, trailer, airplane, and industrial equipment manufacturers.

Electric Storage Battery Co., New York office: John W. Weigot has been appointed manager of the New York branch at 23-31 West 43 Street. He succeeds D. P. Orcutt, who retired after thirty-six years' service.

Edward Valves, Inc., Houston, Texas office: D. O. Bayless has been appointed

special factory service engineer for Southwestern United States with headquarters in Houston.

Electric Auto-Lite Co., Toledo, Ohio. Three district representatives have been appointed as follows: E. B. Fest, Pittsburgh; D. W. McDuffee has been assigned to the Detroit territory, and Albert Mullikim will work in the Seattle district.

(*Continued on page* 302)

How can they COUNT on the thickness of a sheet of steel?

FROM HIS PULPIT, this rolling-mill operator can see at any moment whether there is any variation . . . *even down to 0.0001"* . . . in the thickness of the steel sheet passing between the rollers in front of him. Nor does this take "second sight" or "X-ray eyes." For facing him is a Veeder-Root Counting Device, built-in as an integral part of an electrolimit gage housed in alloy steel of low thermal expansion. This counter is pre-set to the space between the rolls. And when these rolls are in contact with the steel strip, the operator gets a continuous *direct*, micrometric reading which indicates in decimals any variations in the strip passing by.

So it's easy for him to keep everything under constant *Count*rol . . . to keep himself free from the nerve-frazzle of threatening errors, eye-fatigue, and damage to his equipment. In fact, in *all* precision operations, this is the trend in micrometric measurement. . . . direct, decimal readings that are plain and unmistakable. And *you* can count on Veeder-Root to give you the same *Count*rol as here . . . facts-in-figures you can count on to tell you the truth, protect your profits, save you time. Write.

The Counting House of Industry

VEEDER-ROOT INC.
Hartford 2, Connecticut

***In Canada*: Veeder-Root of Canada, Ltd., Montreal**
***In England*: Veeder-Root Ltd. (New address on request)**

RIGHT IN THE SWING!

Abbott is "right in the swing of things . . . new equipment . . . more floor space . . . more machines! The nation's all-out production schedule has increased the demand for Abbott Bearing Balls more than ever . . . . We're working night and day . . . doing everything we can to meet this demand . . . we're leaving no stone unturned to keep Abbott Bearing Balls rolling to you.

CARRY THE LOAD AS PLANNED

SPECIFY "ABBOTT"

ROLL ON ABBOTT Bearing BALLS

THE ABBOTT BALL COMPANY HARTFORD 10, CONN. U.S.A.

(*Continued from page* 300)

Vanadium-Alloys Steel Co., Indianapolis office: Arne Hedstrom has been named to head the new sales office at 243 East Ohio Street.

Reliance Electric & Engineering Co., Cleveland, Ohio. W. G. Hall has been made manager of a combined renewal parts and service division. He succeeds Arthur W. Ray, who has retired after completing 40 years' service.

Champion Lamp Works, Lynn, Mass. Fred J. Vorlander, commercial engineer,

has been placed in charge of the companys' lamp and lighting application activities.

S. F. Bowser, Inc., Atlanta office: H. Cubbie Roane has been named assistant district manager of the territory including North and South Carolina, Georgia, Florida, Alabama, Mississippi and Eastern Tennessee.

Signode Steel Strapping Co., Chicago, Ill. C. R. Gustafson has returned to the company, after nearly four years leave

of absence with the U. S. Naval Reserve to assume the post of manager of the company's recently formed Railroad sales division.

Carboloy Co., Inc., North Texas area: Briggs-Weaver Machinery Co., 309 North Market Street, Dallas, has been named an authorized distributor for cemented carbide tipped tools, blanks, masonry drills and diamond impregnated grinding wheel dressers.

Ampco Metal, Inc., Milwaukee, Wis. J. R. G. Harris has become manager of resistance welding sales. D. S. Goebel has been appointed manager of mill products sales. G. E. McCulloch has been named manager of safety tool sales. F. C. Hawks has joined the sales staff as field engineer-mill products with

(*Continued on page* 306)

NOW! GAGE LIFE 12½ TIMES LONGER ...SERVICE RECORDS SHOW

5-PLUS FEATURES

1. Greater accuracy and stability
2. Longer wear life
3. Less weight
4. Positive identification
5. Positive adjustment

ACCURACY YOU CAN TRUST

WOODWORTH THREAD RING GAGE PROVES AMAZING SUPREMACY OVER ORDINARY GAGES

Almost unbelievable results on actual shop inspection prove the new Woodworth Adjustable Thread Ring Gage far superior to ring gages of ordinary design.

ONE MANUFACTURER, USER OF MANY GAGES, MAINTAINED ACCURATE INSPECTION WITH A SINGLE WOODWORTH GAGE TWELVE AND ONE-HALF TIMES LONGER THAN WITH ANY RING GAGE PREVIOUSLY USED. THINK WHAT THIS MEANS TO YOUR GAGE COSTS.

Wire or write for folder No. 46R.

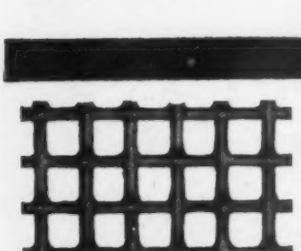
WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION, 1300 E. NINE MILE ROAD • DETROIT 20, MICHIGAN

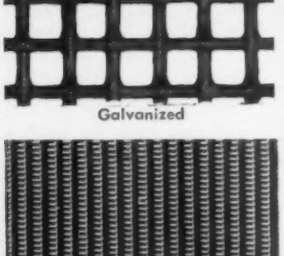
PRECISION GAGES • PRECISION MACHINE PARTS • DIAPHRAGM CHUCKS • ADJUSTABLE CLAMPING JIGS • SPECIAL TOOLS

LUDLOW-SAYLOR

WOVEN WIRE SCREENS and WIRE CLOTHS



Galvanized



Dutch Weave

Our

90TH

Anniversary

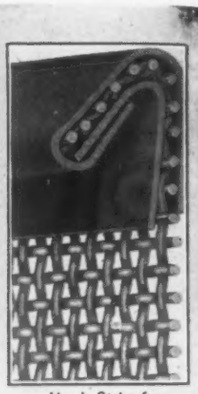
1856-1946

NINETY YEARS of precision engineering, of striving for perfection, lie behind the rugged construction and accurately sized openings of Ludlow-Saylor wire screens.

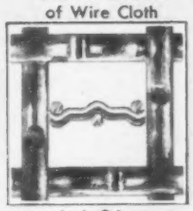
The same careful research lies behind our facility in weaving industrial wire cloths.

Inquiries are invited for wire cloths and wire screens of all commercial metals, alloys or weaves—in continuous lengths, cut to size, or processed to meet your special requirements.

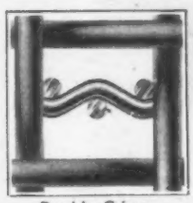
Your specifications and blueprints will be followed exactly as your engineers have designed them.



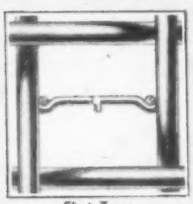
Hook Strip for Coarser Grades of Wire Cloth



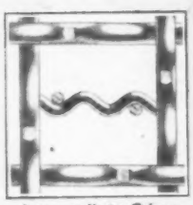
Arch-Crimp



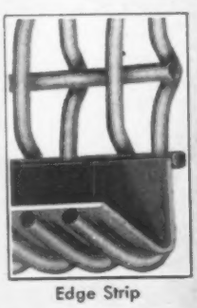
Double-Crimp



Flat Top



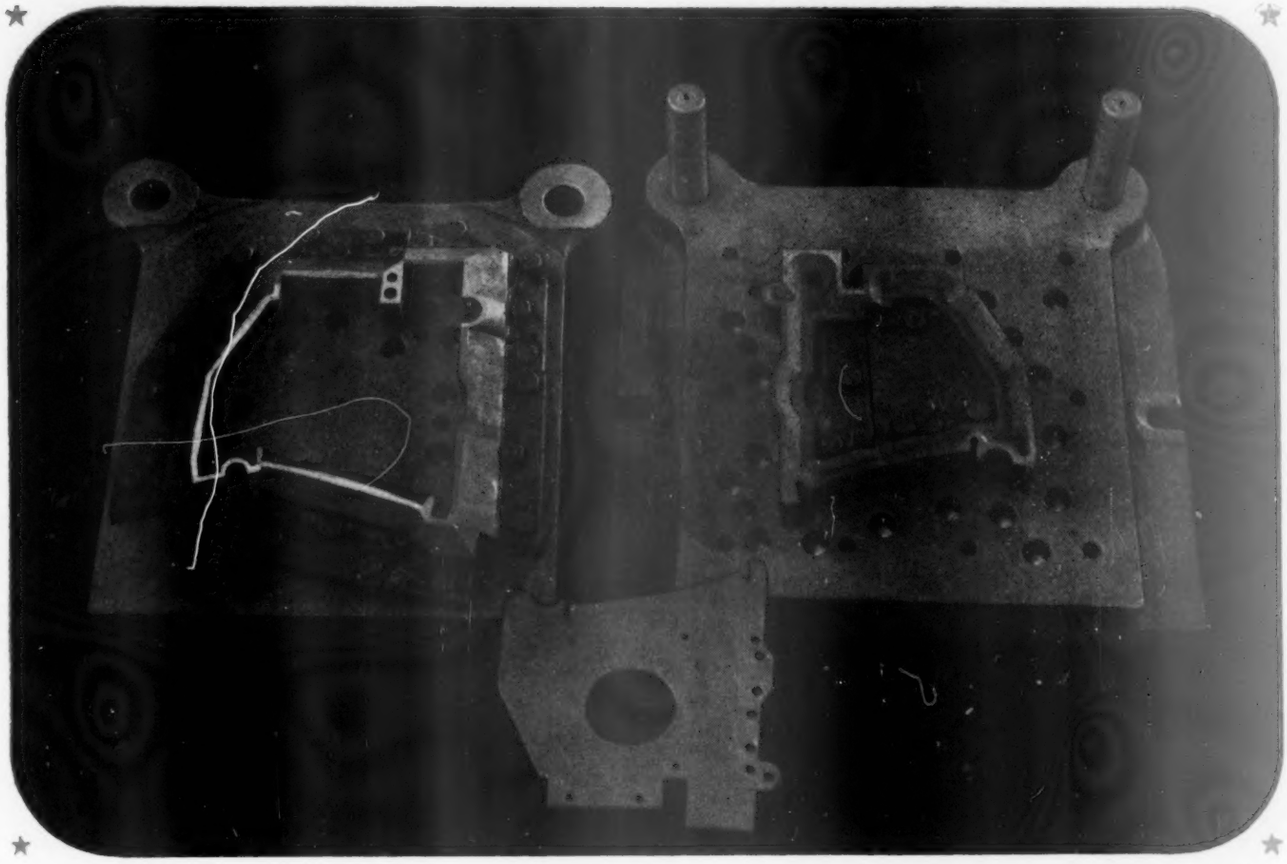
Intermediate-Crimp



Edge Strip

The LUDLOW-SAYLOR WIRE COMPANY

614 South Newstead Ave. ST. LOUIS 10, MISSOURI



HOW TO *Cut Costs and "Corners"* ON YOUR BLANKING DIES

You can save steel and time in the making of dies for blanking, trimming, beading, or any application involving the cutting of sheet metals to regular or irregular shapes, by assembling them from FCC Composite Steel Die Sections.

These prefabricated die parts consist of fine tool steel cutting edges, in a selection of grades, electrically welded by a special process to non-hardenable mild steel bases. Thus, screw and dowel holes may be easily drilled after heat treating, and there are numerous other advantages that will be immediately obvious to the die maker.

Thousands of die shapes may be made up from combinations of thirty-five standard sections. Specially shaped sections are manufactured to customers' specifications in five to ten days.

• Make *your* dies this money-saving way—full data on request.

WRITE FOR ENGINEERING DATA

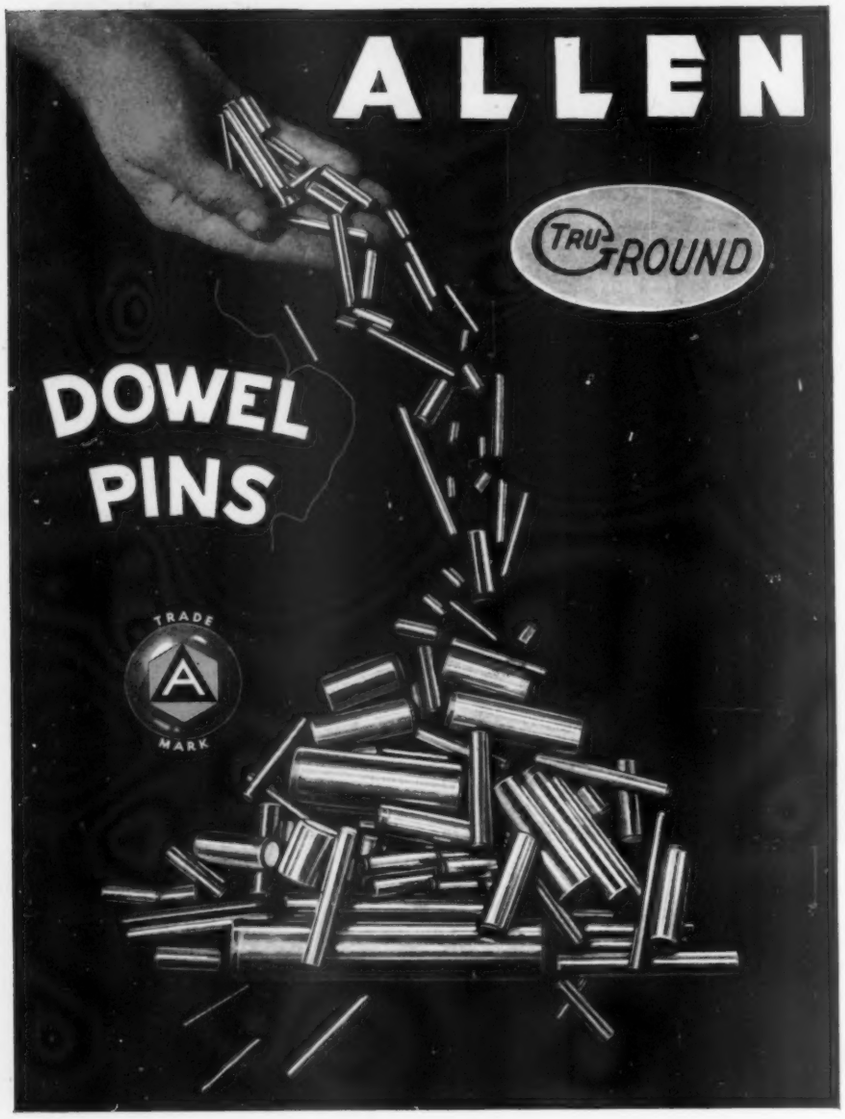
It contains a print showing the various standard shapes available for quick shipment, and explains how to order special shapes, including rib-reinforced extra high sections. It also contains prices. Get your copy—write for it today.

ADDRESS DEPT. P-42

W&D 9477-C

ALLEGHENY LUDLUM STEEL CORPORATION

Forging and Casting Division
Detroit 20, Michigan



They serve as locating pins for the diemaker's work — and function further as perfect shafts for pins and pivots in various machine assemblies.

Accurate to a limit of .0002" over basic size, with allowable tolerance of plus or minus .0001". Ground, polished surfaces, treated with rust-preventive. Heat-treated to an extremely hard exterior, with core of the right hardness to prevent "mushrooming" when driven into a tight hole. Tensile strength, 240,000 to 250,000 p. s. i. Steeled to *retain* precision standards in tool and die work; special-analysis *ALLENOY* steel used exclusively.

Ask your local ALLEN Distributor for samples and dimensional data . . . the same Distributor who serves you dependably with Allen Hex Socket Screws and other first-call mill supply items.

ALLEN Hollow Set Screws, Socket Head Cap Screws and Flat Head Cap Screws, "Tru-Ground" Shoulder Screws, Square Head Set Screws, Pipe Plugs, Key Kits, "Tru-Ground" Dowel Pins, Tap Extensions.

THE ALLEN MANUFACTURING COMPANY
HARTFORD 1, ★ ALLEN ★ CONNECTICUT, U. S. A.

(*Continued from page 302*)

headquarters in Chicago Al Jenss has been appointed manager of the licensing bureau.

John A. Roebling's Sons Co., Trenton, N. J. Fred J. Maple, formerly manager of advertising has been named manager of exhibits. Albert Neroni succeeds Mr. Maple as advertising manager.

Elastic Stop Nut Corporation of America, Union, N. J. Charles E. Heintz, who has

been general sales manager for the past two years, has been elected vice-president in charge of sales.

Tube Turns, Inc., New York office: S. M. Spears, Jr., has been promoted to assistant district manager.

San Francisco and Los Angeles offices: James H. Withers has been appointed district manager in charge of the two offices. Mr. Withers will divide his time equally between the San Francisco office, at 2611-12 Russ Building and the Los Angeles office, at 1625 South Hill Street.

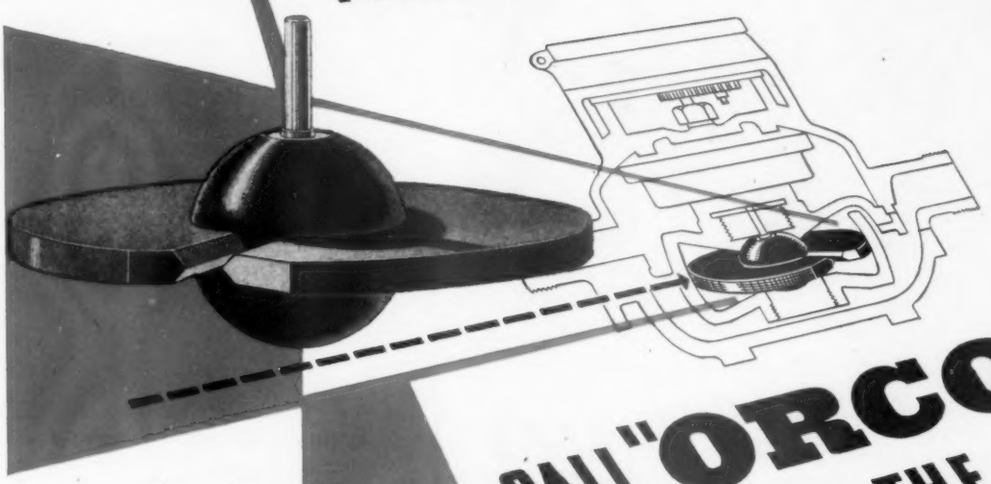
Udylite Corp., Indianapolis, Indiana office: Vincent R. Kelly has been ap-

pointed sales engineer for the Indiana territory with headquarters at 27 East Westfield Blvd.

Hydraulic Machinery, Inc., Dearborn, Mich. John S. Shafer has joined the staff as sales engineer.

Pennsylvania Salt Mfg. Co., Philadelphia, Pa. Don D. Hoffman has been named assistant manager of the Laundry and Dry Cleaning division. Tacoma, Wash., office: T. E. Moffitt has been made sales manager of the Pennsylvania Mfg. Co., of Washington, a Pennsalt subsidiary. He will be in charge of all heavy chemical sales activities in this area.

FOR THOSE TOUGH PROBLEMS IN RUBBER



Above views illustrate a "NO-WARP" water meter disc and its position in a typical meter.

CALL "ORCO" FOR THE CORRECT SOLUTIONS!

This is a "sample" of "ORCO-OPERATION" . . . the kind of co-operation YOU can expect when YOU refer YOUR problems in rubber to ORCO.

More than ten million water meters are in use in this country. Many of them are of the "disc-type" similar to the sectional drawing above. Accuracy and sensitiveness of water meters are dependent upon the accuracy of component parts, especially the DISCS. Ordinary discs are subject to warping and distortion with resultant inaccuracies of meters. To eliminate such troubles, The Fred W. Hanks Company of Cleveland, Ohio, supply water system departments with NO-WARP Discs of all types used in the U. S. A. and Canada.

"Hanks NO-WARP discs" are made of a special material originated by Fred W. Hanks. Not only must this material be compounded to consistently uniform standards of toughness but it must conform to exacting standards of specific gravity and accurate machinability.

According to Mr. George A. Miller, Superintendent of The Fred W. Hanks Company, the required accuracy of compounding and molding NO-WARP Discs is the kind of ORCO-OPERATION his company is receiving from The Ohio Rubber Company. "It's a tough assignment for any rubber manufacturer," says Mr. Miller, "and we are certainly pleased with the way ORCO handles our work."

* * * * * * * *

When YOU have a problem in rubber (hard or soft and of any type) call ORCO and let ORCO-OPERATION work for YOU.

THE OHIO RUBBER COMPANY

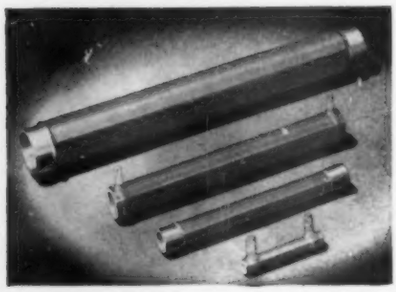
Orco-operation

WILLOUGHBY, OHIO

Factories: WILLOUGHBY, OHIO • LONG BEACH, CAL. • CONNEAUTVILLE, PA.

Branch Offices: DETROIT • NEW YORK • CHICAGO • INDIANAPOLIS • CLEVELAND • BOSTON • ROCHESTER, N. Y.

FOR VHF CIRCUITS YOU WANT THIS RESISTOR . . .



Ward Leonard Non-Inductive Bulletin 21 Resistors were designed especially to meet the exacting requirement of high-frequency applications. The unique design of the Ward Leonard Refractory accurately fixes the points at which the Ayrton Perry Windings cross. This reduces inductance and distributed capacitance to an absolute minimum. Bulletin 21 Resistors are Vitrohm Resistors with the desirable characteristics of all Ward Leonard Vitrohm Resistors.

Available in a wide range of sizes and resistance values, with ferrule or tab terminals. For further information see Bulletin 21.

Write for Bulletin 21 today

WARD LEONARD
RELAYS • RESISTORS • RHEOSTATS
Electric control devices since 1892

WARD LEONARD ELECTRIC COMPANY
50 SOUTH STREET, MOUNT VERNON, N. Y. • OFFICES IN PRINCIPAL CITIES

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GARWOOD, N. J. BALTIMORE 31, MD. LOS ANGELES 21, CAL.

WRITE US FOR PRICE LIST AND GRADE USE GUIDE

Postwar Purchasing Policies

(*Continued from page* 117)

first day's session with the feeling the Pacific Northwest is on the threshold of a bright business future, spent the second day, Sunday, on the golf course, where the conference ended at the eighteenth hole at noon.

The conference was presided over by Kenneth A. Knudson, of the Everett Pulp & Paper Co., Everett, Wash. Vice-chairmen, who presided over the panel discusions, were: J. B. Watson, Silbak-Premier Mines, Ltd., Vancouver, B. C., and Don Tenney. General chairman of the Conference Committee for the host chapter of the Purchasing Agents' Association of Washington, was M. F. McClane, Seattle, of the Washington Co-operative Farmers' Association.

* * *

Engineering For Tomorrow

(*Continued from page* 91)

sulation will be realized. Furthermore, the insulation has remarkable ability to resist moisture, even under adverse conditions of humidity and wide swings in temperature.

We cannot expect silicones in the immediate future to replace generally our conventional organic varnishes. It is still too expensive. Silicone varnishes now cost about $15 a gallon, which is seven to ten times the cost of good varnish. Also, the baking temperature for silicone-treated insulation is about 100 degrees C, above that for ordinary varnishes. The ovens in most motor-repair shops cannot provide such temperaures.

However, where a reduction in size or an increase in output of a rotating machine is desired, or where ambient temperatures are high and temperature is the limiting factor, silicones are the answer. They are particularly useful where it is desirable to enclose motors, as for street-railway service. Silicone-treated insulations are attractive for power-house auxiliary motors that must

(*Continued on page* 310)

"Know-How"

INFORMATION

See Pages 10, 12, 14, 16

does your product have

SOCIAL CHARM?

Almost three thousand manufacturers of paper products and stationery are going to spend, annually, $800,000 additionally in sales promoting advertising for the next five years. They are also going to spend a lot of time and thought in the development of sales promoting packages.* Of the 136 million containers used by these plants, seventy-five percent are set-up boxes—and more and more products are raising this percentage.

Most of the products in these allied industries are "take-home products", products that depend to a large extent on their see-ability. and sell-ability. Your product, packaged in set-up boxes, can have greater social charm —greater take-home appeal.

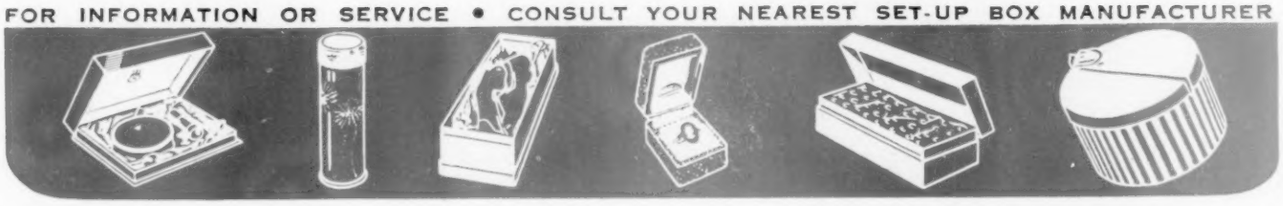
*For a host of other facts and figures write or call your nearest paper box manufacturer for survey No. (51) "Paper Products, Stationery and Allied Lines".

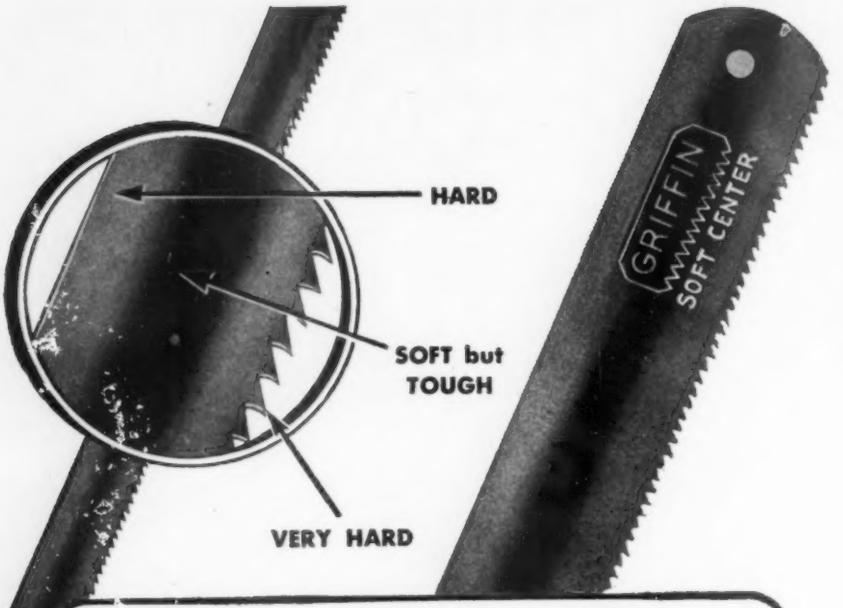
NATIONAL PAPER BOX MANUFACTURERS *Association*

AND COOPERATING SUPPLIERS

Liberty Trust Building • Philadelphia 7, Penn.

FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER





Your Best Buy
for All-Purpose Hand Sawing

GRIFFIN Soft Center Blades are unique — exclusive with Griffin. Flexible as a soft-back blade, tough as an all-hard. Will not bind, sag or shatter. Extra hard, expertly milled teeth, soft but very *tough* center, stiffened back. Hand sizes — for wide range of uses.

OTHER GRIFFIN BEST BUYS

Griffin Tungsten High Speed Steel Blades for cutting very toughest alloys . . . Griffin Molybdenum High Speed Steel Blades for economical general production metal sawing . . . Griffin Non-Strip — teeth do not break out when sawing thinnest sheet or tubing — hand frame sizes . . . Write for latest Price List.

General Sales Agent
JOHN H. GRAHAM & CO. Inc.
105 Duane St., New York 8, N. Y.

GRIFFIN
Hack Saw Blades
MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H.
Hack and Coping Saw Blade Specialists Since 1880

Engineering For Tomorrow

(*Continued from page* 308)

run in hot atmospheres. To show what silicones can do, a marine motor for a cramped location that with ordinary high-temperature insulation would have developed 3200 hp was able to produce 3900 hp with silicone and class B insulation. This was an increase of nearly one fourth.

Silicones may also prove useful for non-rotating apparatus, such as air-cooled transformers, capacitors, and dashpots.

K-42-B

Several years ago research engineers were asked to develop a high-temperature alloy to serve as a substitute for tungsten lead wires of vacuum tubes. A material having high strength at high temperature was required. The trail of that research led strangely to gas turbines, jet propulsion and superchargers. Specifically that original electronic-tube research resulted in the high-temperature alloys — K-42-B and Refractaloy.

High-temperature metallurgy is still a young science. But the significant fact is that in Refractaloy, we have a metal around which high-temperature gas turbines can be built. The steady improvement represented by the most recent Refractaloys as compared to the first K-42-B is a promise of still better high-strength, high-temperature materials.

Moly

Molybdenum, too, is a fascinating new material. But, you say, how can a story about molybdenum—ordinary unalloyed molybdenum of standard purity—merit inclusion in a review of significant engineering as a "new material"? Molybdenum is one of nature's 92 elements which all the chemists or metallurgists in the world can't alter one whit. Its chemical and physical properties, generally quite remarkable, were catalogued in handbooks long ago. Yet to designers, these properties, fascinating though they are, have been almost solely of academic interest, because molybdenum has been available to them in sheets the size of a playing card or rods little larger than wire, and a few other simple shapes of small dimensions.

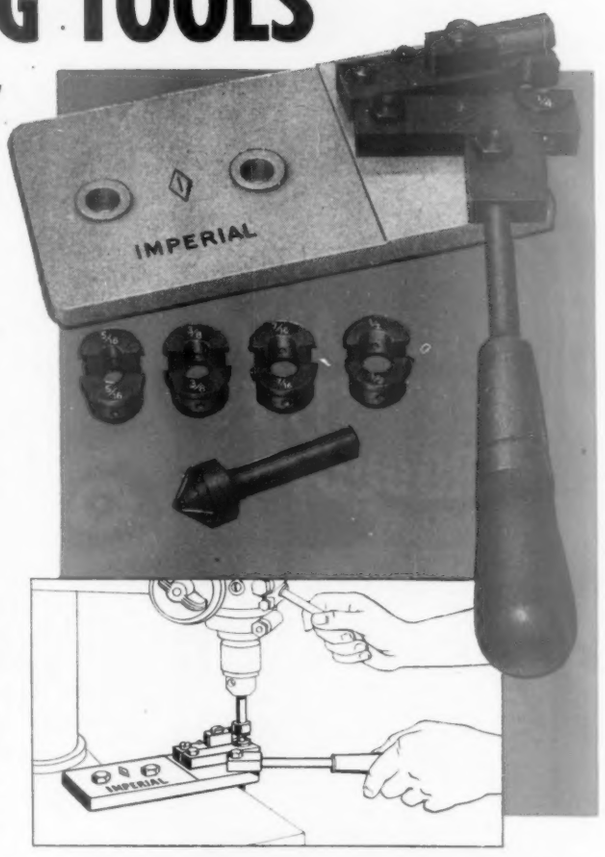
The limitations on the production of moly in "chunks" of large size and multiplicity of shapes have been removed. Furthermore, the cost per pound has been reduced by about two thirds. Oddly enough this feat

(*Continued on page* 312)

Whether it's one flare or many thousands

IMPERIAL FLARING TOOLS

will do it faster, better, easier

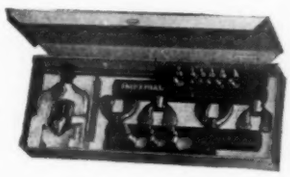


Whatever you need in the way of a flaring tool for soft, thin-wall copper, aluminum, brass, or steel tubing, Imperial has it.

Each of the Imperial tools makes accurate 45° flares for S.A.E. flared joints. The four tools illustrated here are typical of the complete line of Imperial Flaring Tools—tools that are so widely used in industry they have become the standard of comparison.

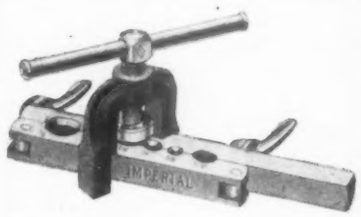
These flaring tools, along with Imperial tools for cutting, bending, swedging, refacing, etc., form a great team that speeds up tubing connecton work and makes tight joints that stay tight.

***New* Production Tube Flarer.** Provides an exceptionally speedy, economical method of making S.A.E. flares on soft, thin-wall metal tubing on a production basis. Can be used on any drill press with movable table. Tubing is securely held in jaws of flaring fixture by a slight movement of the hand lever. Spreader cone, embodying 3 small rollers, is fed by spindle to produce flare. Flares 1/4", 5/16", 3/8", 7/16", and 1/2" O.D. tubing. *Catalog No. 456-F*, $37.50 each.



***New* Wide Range Tool**

With this one flaring tool you can flare 9 different sizes of tubing. Has two flaring bars and one slip-on yoke. One bar flares 1/8", 3/16", 1/4", 5/16", 3/8" and 7/16" O.D. sizes. Other bar flares 1/2", 5/8", and 3/4" O.D. sizes. Eliminates need for having several tools to cover a complete size range. Furnished in metal kit. *Catalog No. 375-FS*, $6.25 each.



Flaring Tool with Slip-on Yoke

Just slip yoke over flaring bar and turn slightly. Inside edges of the yoke are slotted so that once in position a slight turn holds it in place. It's surprising how much this improvement speeds up flaring. *Catalog No. 193-F* flares 3/16", 1/4", 5/16", 3/8", 7/16", and 1/2" O.D. tubing, $3.25 each. *Catalog No. 195-F* flares 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing, $4.25 each.

Double-Flaring Tool

Provides a new simple method of making accurate 45° double flares on thin-wall, soft steel, soft copper and aluminum tubing. Insures against cracking of welded or brazed steel tubing when flaring. Makes flares with double thick walls. Also makes single flares. Complete in metal kit. For 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. *Catalog No. 93-FB*, $7.00 each.

THE IMPERIAL BRASS MFG. CO., 512 South Racine Avenue, Chicago 7, Illinois

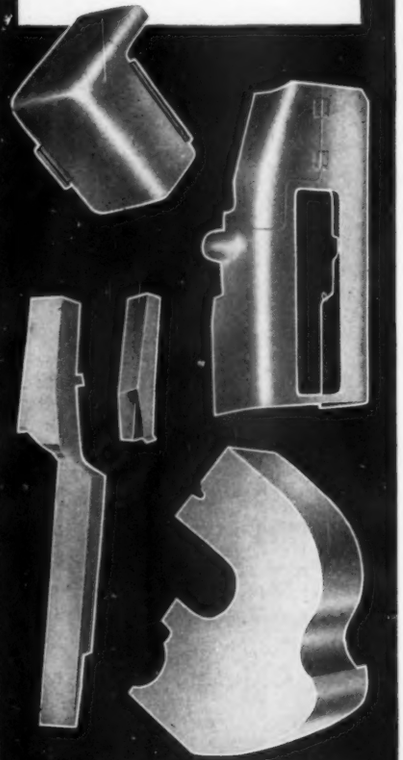
IMPERIAL

Emblem of Quality

Pioneers in Tube Fittings and Tube Working Tools

PLATE AND SHEET STEEL PRODUCTS

If it's a base, guard, or special metal part for a new machine or to replace a worn out unit, Littleford is equipped to make the most intricate of fabricated steel products. Whether it's to be made from plain steel or alloy metals it can be formed and welded to the exact detail. It's no problem to get special fabricated metal parts; let Littleford be your source of supply, even if it's for one unit or many — send blueprints for estimate of cost.



LITTLEFORD

LITTLEFORD BROS., INC.
446 E. Pearl St., Cincinnati 2, Ohio

Engineering For Tomorrow

(*Continued from page* 310)

of major significance in the metallurgical world has been accomplished within recent months in a plant devoted to the manufacture of lamps and electronic tubes.

The excellent properties of moly are now available for a variety of uses. The most important properties are its high melting point, and high wear resistance at high temperatures. Also it has a higher modulus of elasticity, higher strength when hot, and better thermal conductivity than any steel. Also, it is lower than the steels in specific heat and coefficient of expansion. Its corrosion resistance compares favorably in many media with tantalum, palladium, and platinum, each costing many times more than "moly."

Moly is expected to be useful as crucibles, electronic tube filaments, welding alloys, high-temperature engine parts, etc.

New materials are important, of course, because they enable designers to make new products, to design stronger, better machines. But they mean much more than that. We have been depleting our natural resources at a furious rate. Some are all but gone, others are getting scarce. Most of them when gone are gone forever. In this regard man is slowly but surely impoverishing himself.

But opposing this trend is the steady flow of new materials. Each time a material emerges from the laboratory it is as if a new mine had been discovered, new wealth added to our storehouse. Each new material either represents a useful substance made from materials heretofore of little value, or by some superiority enables a given amount of material to go farther. Sometimes both. Prospectors will continue to search the earth for new resources, but probably they will be pale in value compared to the discoveries in the laboratories.

* * *

X-Ray of Purchasing Department

(*Continued from page* 126)

a bad taste in the mouths of outsiders who come in contact with it? Does the purchasing personnel function in such a way as to foster a spirit of cooperation between that department and the other folks who make up the institution? Is the routine sufficiently flexible to accommodate itself to changing conditions? Is the system set up to take

(*Continued on page* 314)

BEALL
Spring WASHERS

Bolted assemblies stay TIGHT permanently

BEALL SPRING WASHERS, with live, long-range action compensate for ALL causes of looseness including vibration, bolt stretch, wear, rust and break-down of finish under the nut and bolt head.

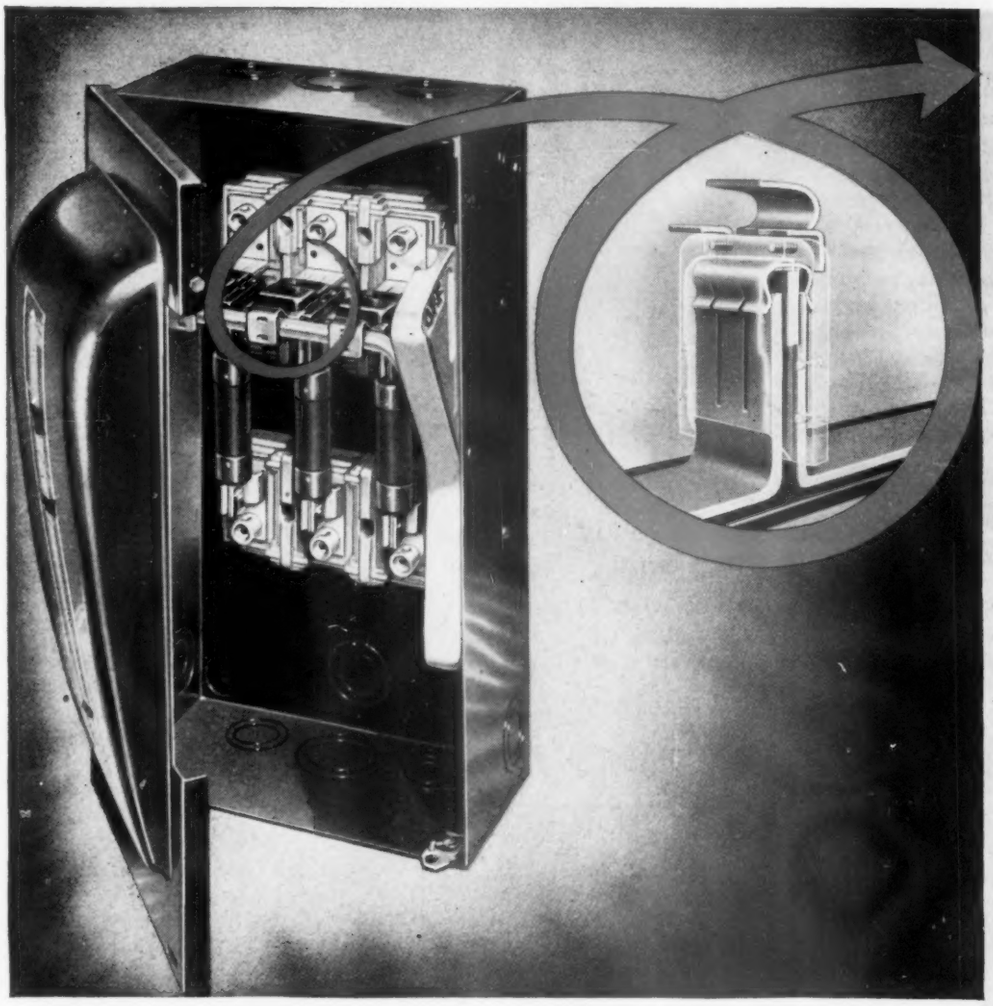
IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur and Duronze.

BEALL TOOL DIVISION (HUBBARD & CO.)
160 Shamrock St. EAST ALTON, ILL.

IF YOU ARE NOT NOW RECEVING A PERSONAL COPY OF PURCHASING EACH MONTH - -

—drop a line to Reader Service Department, Purchasing, 205 East 42nd St., New York 17, and we will enter your subscription promptly — price $3 for one year, $5 for two years. You will then get your copy of PURCHASING promptly and will be able to clip the valuable articles in it for your personal reference files.

Less arcing...longer life...



WITH BULLDOG *Vacu-Break* SAFETY SWITCHES

SAFETY SWITCHES are the guardians of electric circuits. They keep power on the job. That's why you'll want to weigh the advantages of BullDog Vacu-Break Safety Switches—for today and for the years to come.

There are six plus values in Vacu-Break Safety Switches—six exclusive design features to make them ideal productive devices for trouble-free operation under heavy production schedules.

1. Less arcing and resultant longer life, because BullDog's formed "Bakelite Arcing Chambers" confine and suffocate arcs to prevent burning and pitting of contacts.
2. "Clampmatic" switch contacts, providing "clamp type pressure" when contacts are closed—quicker, easier release when the handle is thrown to the OFF position.
3. Quick action mechanism assures positive "ON and OFF" operation with a minimum number of wearing parts.
4. Ample wiring room is provided without sacrificing compactness.
5. Solderless wire grips.
6. Streamlined handle placed within the cabinet lines to allow front operation and closer banking of switches.

BullDog Vacu-Break Switches—first in quality and first in safety—keep power on the job to help you speed production and reduce maintenance costs. Get full information now—either by consulting a BullDog field engineer or by writing us for descriptive folders.

• • •

Manufacturers of SafToFuse Panelboards—Switchboards—Circuit Master Breakers—BUStribution DUCT for "plug-in" power—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for Portable Tools, Cranes and Hoists.

BULLDOG
ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN. IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO. FIELD OFFICES IN ALL PRINCIPAL CITIES

EXCLUSIVE *Vacu-Break* AND CLAMPMATIC CONTACT FEATURES

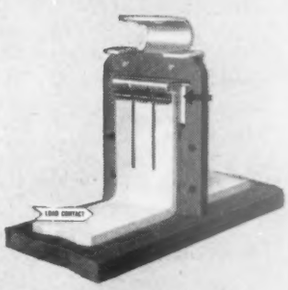
"CLAMPMATIC" SWITCH CONTACTS

With formed Bakelite cover removed, illustration shows moving contact confined within the slotted section of the arcing chamber, free to engage stationary contacts when switch is operated from "OFF" to "ON" position.

EASY MAKE AND BREAK

(Left) When operated to OFF position, clamping spring first releases its pressure to remove disconnecting resistance.

(Right) When operated to ON position, contact (slug) first engages stationary line and load contacts before clamping spring makes full pressure contact.



BOLT TIGHT CONNECTIONS

Moving contact (slug) is held tightly between line and load contacts by clamping pressure spring in full ON position.

HERE'S ONE "Sit Down" THAT Speeds Production

Kewaunee Automatic Adjustable Chairs and Stools can help you solve your industrial seating problems. Especially designed for correct body alignment, they reduce costly worker-fatigue. Kewaunee Chairs and Stools fit any man or woman, tall or short, light or heavy. Instantly adjustable to varying working heights by merely lifting the seat to proper height. Sturdily constructed, yet light in weight. Adjustable foot-rest if desired.

Kewaunee

AUTOMATIC ADJUSTABLE CHAIRS and STOOLS

4 HEIGHT RANGES—12-15", 15-21", 18-27", 24-36"

See for yourself how this "Sit-Down" can speed up production. Let us send you a Kewaunee Chair or Stool on a 30-day trial at no cost or obligation to you. Write for descriptive circular.

C. G. Campbell, President

KEWAUNEE MFG. CO., ADRIAN, MICH.

The New "UTILITY" MARKING OUTFIT

Nine sizes of type marked with one holder. Furnished in sturdy type box for all interchangeable markings of . . .

- Serial numbers — brand names
- Fractional type — etc.
- Special steel for safety

Write for literature.

M.E. CUNNINGHAM CO. SAFETY STEEL STAMPS

154 Carson St., Pittsburgh 19, Pa.

The PURE OIL COMPANY U.S.A.

A Complete Line of Industrial Petroleum Products

A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

Be sure PURE with Pure

X-Ray of Purchasing Department

(*Continued from page* 312)

proper care of the inevitable emergency purchases? Are the instances too frequent wherein the buyer, through lack of technical qualification, is unable to contribute any except clerical service in the purchase of the item?

Ethical Responsibility

As long as we are dreaming we might as well dream up the kind of X-rays which would be capable of producing not only an analysis of the *physical* adequacy of our purchasing departments but also would cast a shadow of our *moral* worthiness or lack of it. How incisive is our sense of right and wrong? Are we able to comprehend the less direct implications of our policies and our actions against the whole broad background of social morality?

In our schools, no less than in our homes, we expect our children to have the opportunity to develop a sense of personal integrity. As they grow up, we want that faculty to be nurtured to fruition in a conscious sense of social accountability for individual actions. Are we, in the business offices of our schools and colleges, exemplifying that desired social conscience if we repeatedly take unfair advantage and crowd the borderline of honesty and integrity, excusing our actions on the basis of apparent benefit to a *non-profit* institution? I am thinking of the prevalent charges that the schools have applied for and received donated surplus equipment far in excess of their capacity to use it effectively, charges of stretching the definition of equipment suitable for preinduction training far beyond its originally intended scope, charges of lobbying and political pressure to force donations of materials to schools, materials which might otherwise be sold to reduce the national debt. Federal subsidization of local education has never been endorsed by the people. Are we trying to jimmy a back window Have the schools considered what company they are courting in joining the ranks of the treasury raiders? Our own professors of sociology, economics and political science have been among the most vociferous in criticizing self-interest groups which chisel at the public pocket-book. We are going to have to live with our consciences for quite a while yet, and in the schools we are close to being in a spotlight position in relation to things pertaining to ideals

(*Continued on page* 318)

WHETHER YOUR PRODUCT IS SMALL OR LARGE . . .

BETTER SPRINGS

will make it better

THE flick of a lighter . . . the cushioned surge of a powerful locomotive . . . both depend on modern spring engineering for their successful performance. Size places no limitation on our ability to help you select the right springs for your product.

Perhaps the manner in which you must apply springs may seem involved and decidedly off the beaten track. But the chances are that a precise and workable answer can be found in the vast fund of spring engineering experience our specialists have accumulated over the years. If it turns out that you do require an innovation in design and application, our unexcelled research, testing and metallurgical facilities are available to develop completely new springs of the proper characteristics.

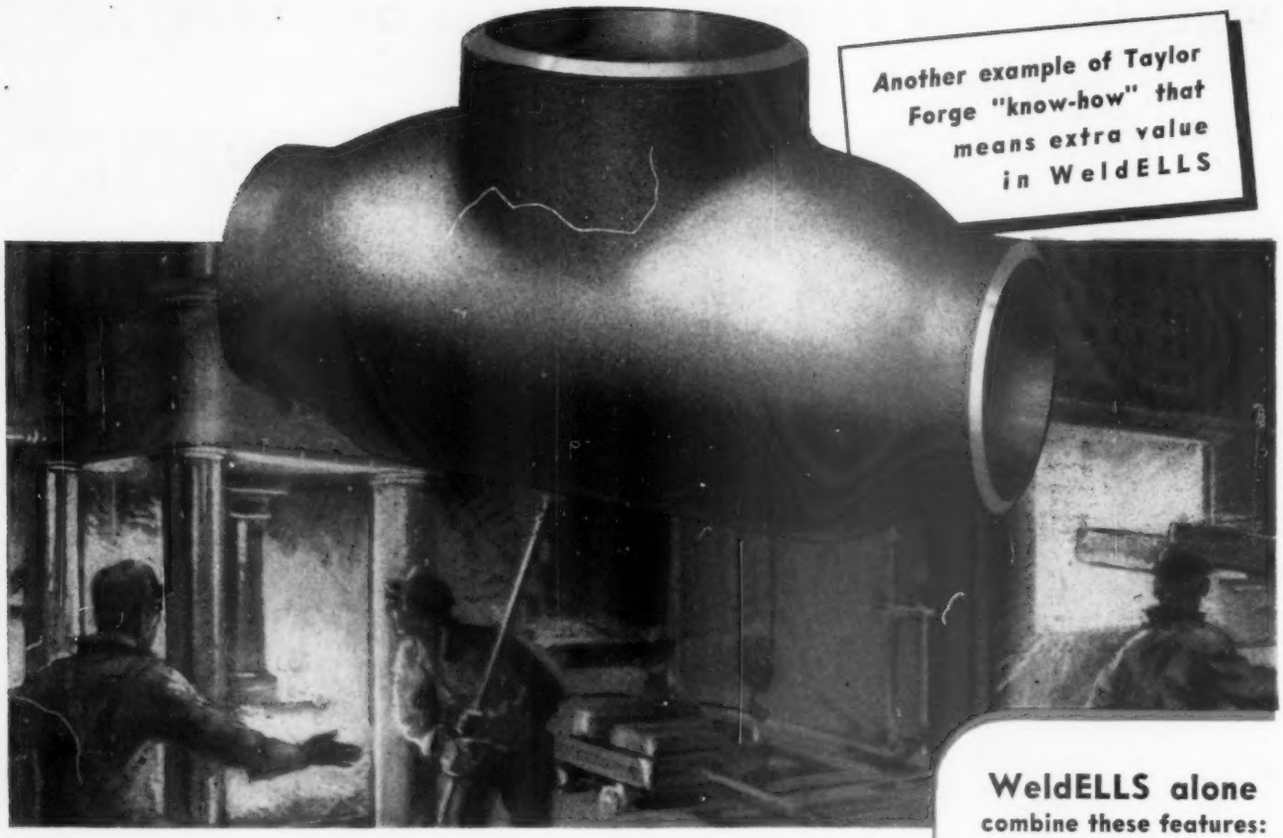
When it comes to production, we can offer you the advantages of fully controlled quality and performance. Remember, we make not only the springs but the steel that goes into them. And our manufacturing capacity has been streamlined and tuned up to meet your needs, whatever the quantity. If you want *better* springs than you can get elsewhere, call us.

LISTEN TO . . . the "Hour of Mystery" presented by United States Steel on the radio every Sunday evening. Consult your local newspaper for time and station.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago, and New York
Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Export Company, New York
UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY
USS
AMERICAN SPRINGS
UNITED STATES STEEL

U·S·S American Quality Springs



Rare specimen in Welding Tees—

● *When you think of a reducing tee you always picture it as reducing in the branch. But this one, for the peculiar purpose it serves, had to be made the other way around. It's a seamless, carbon-moly forging, five inches in the run with a seven-inch branch—an "increasing" tee, so to speak; one more example of those kinks that are found so abundantly in the Taylor Forge bag of tricks.*

The "know-how" acquired during many years of performing these special—often extremely difficult—manufacturing operations, has a mighty important bearing on our standard line of WeldELLS, Welding Tees and other Taylor Forge Welding Fittings.

It means that in developing WeldELLS we did not have to ask what kind of fitting is easiest to manufacture. Instead we asked what comprises the ideal fitting, and then, with every special facility and process at our command, made that conception a reality.

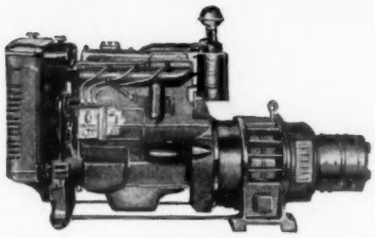
That is why WeldELLS have tangents . . . why they have extra reinforcement where service stresses are greatest . . . why they have such extremely accurate dimensions . . . why they have the features listed opposite . . . why, in short,

WeldELLS have everything

WeldELLS alone combine these features:

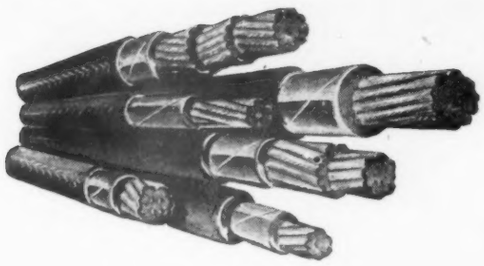
- **Seamless** — greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement** — provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World** — insures complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P.O. Box 485
New York Office: 50 Church Street • Philadelphia Office: Broad Street Station Bldg.



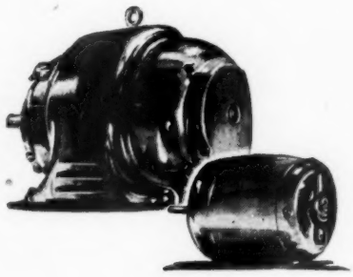
GENERATORS

If unit power generation is your problem, it will pay you to check our large lists of this type of equipment. We have gasoline, steam, Diesel and electric driven generators—(and generators without prime movers) in a wide range of load and voltage characteristics, in both a-c and d-c.



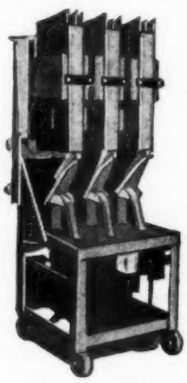
WIRE & CABLE

Our inventory includes an innumerable variety of wire and cable in sizes and insulations usable in industry. Many types conform to underwriters' specifications—others were made for special purposes but are adaptable to industrial and commercial applications.



MOTORS

We have a large supply of electric motors, both a-c and d-c, in unusual speeds, voltages and loads. If you have applications in which these motors can be adapted, inquire at your nearest Regional Office for full particulars and prices.



SWITCH GEAR

Special items in this category are now available if you can use them. Check your requirements and avail yourself of this opportunity to purchase switch gear at considerable savings. Consult your nearest W. A. A. office for description, location and prices.

STANDARD AND SPECIAL ELECTRICAL EQUIPMENT

FOR SALE

priced for immediate disposal

The War Assets Administration offers you government-owned surplus electrical machinery and equipment for your reconversion program at *substantially reduced prices.*

The offer includes wire and cable, generator sets, transformers, switch gear, wiring devices, sub-station power conversion and protective equipment. Much of it is special but adaptable to a large variety of uses.

It has been *priced to sell* and represents attractive bargains to the alert and resourceful industrialist engaging in speedy reconversion.

(Cut out and send to the nearest WAA office listed below)

War Assets Administration: I am interested in the following checked items:

- ☐ WIRE & CABLE
- ☐ GENERATORS
- ☐ SWITCH GEAR
- ☐ SPECIAL ELECTRIC MOTORS
- ☐ WIRING DEVICES
- ☐ POWER CONVERSION EQUIPMENT
- ☐ SUB-STATION EQUIPMENT
- ☐ PROTECTIVE EQUIPMENT

Name..... Tel. No.....

Firm.....

Address.....

City..... State..... 319-1

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta · Birmingham · Boston · Charlotte · Chicago · Cleveland · Dallas · Denver Detroit · Helena · Houston · Jacksonville · Kansas City, Mo. · Little Rock · Los Angeles · Louisville Minneapolis · Nashville · New Orleans · New York · Oklahoma City · Omaha · Philadelphia Portland, Ore. · Richmond · St. Louis · Salt Lake City · San Antonio · San Francisco · Seattle · Spokane Cincinnati · Fort Worth (Telephone 3-5381)

VETERANS OF WORLD WAR II: To help you purchase surplus property, a veterans' unit has been established in each WAA office.

PROMPT DELIVERIES NOW!

Despite the tremendous demand for "Duet" we are finally caught up due to further production expansion. Thanks for your past forebearance.

Owing to AMAZING AMOUNT of WATER it HOLDS, "DUET" can be used as a Sponge . . . or wrung out tightly, like a Chamois.

Ideal for **HEAVY DUTY work in industry. *CANNOT UNRAVEL.* Each thread locked by a hidden stitch. EXTRA DENSE, long-wearing surface. SAVES MONEY. Used dry its dense surface picks up dust like a magnet.**

ANOTHER PRODUCT OF
AMERICAN SPONGE & CHAMOIS CO., Inc.
49 ANN STREET, NEW YORK 7
245 MISSION STREET, SAN FRANCISCO 5
Producers of
AMSCO CHAMOIS and MERMAID SPONGES
EST. 1869 DEMAND BY BRAND

X-Ray of Purchasing Department

(*Continued from page* 314)

and principles. To whatever degree the charges are true, I don't believe it is a smirking matter.

I think I can hear some of you protesting that such quantities of surplus items as the schools receive are but drops in the ocean as compared with, for instance, what the army wastes. As Billy Sunday of the sawdust trail would say, the plea that because it is a comparatively little sin it ought not be condemned too harshly, is one of the saddest mistakes that otherwise decent people can make. I'd like to add my opinion that *any* support for the all-too-prevalent philosophy that *small* leaks are unimportant, is probably the greatest threat to our national stability at this critical stage in our national life. It leads inevitably to debt repudiation.

In conclusion, it may be that we should make a virtue out of our necessity and admit that the value in X-Raying our purchasing departments may be more in the very act of self-examination rather than in the limited prospect of having our diagnosis put upon an empirical basis. The consciousness that our acts will be subject to some degree of review tends to make us more careful to do our best. A serious attempt at rating the department's effectiveness will probably pay dividends in several directions not anticipated beforehand.

* * *

WHAT IS HOMOGENIZATION?

The following explanation of "Homogenization" appears on title page of booklet published by Marco Co., Inc., Wilmington, Del., on the Flow-Master line of processing equipment:

"To homogenize is to put incompatible components in stabilized suspension in a liquid media.

"To suspend and stabilize solids in a collodial substance so that they neither rise if they are lighter than the vehicle nor fall if they are heavier.

"To reduce oils and fats to minute globules in a vehicle and disperse them so that they form emulsions free from stratification.

"To suspend minerals, pigments and the like in a vehicle."

It is explained that these several actions are accomplished by reducing all elements to minute subdivisions by a series of actions, and then thoroughly coating all surfaces with the vehicle. This enables them to defy the law of gravity although the solids may be heavier than the vehicle.

Educational Buyers Convention

(*Continued from page* 123)

"In the early stages of our activity when we sought to help in the drafting of regulations to implement Section 13, your committee went on record as not seeking gifts for education but requesting a liberal interpretation of the law so that the pent up needs of education could be met at a nominal cost, and so that colleges and universities could refit shops and laboratories that were outmoded because of wartime developments and that could not be modernized on limited capital budgets for years to come, thereby returning to society in the form of better instruction some of the extravagances of war.

"The Army's donation program for pre-induction training, though limited in scope and progressively restricted, has benefitted many colleges and universities. Though frequently threatened with strangulation, the combined efforts of the friends of education and our membership have kept this channel open.

"The part that the Surplus Property Administration played in surplus property disposal is a pathetic story. A succession of changes in administration and organization has not helped our problem so far. Regulations were written and rewritten; old faces disappeared from responsible positions and new ones took up the work; out of the confusion came regulation 14 and regulation 19. These regulations are evasive, full of confusion and subject to many interpretations.

"Your committee has talked with rank and file and has found many good listeners and many good friends, but unfortunately, not too many who have been interested enough or with courage enough to liberalize the regulations or to interpret the law in favor of education.

"Your committee has learned that because of the inadequacy of organization in every phase of supreme property disposal, whether by donation or purchase, nothing is accomplished except through untiring, unrelenting effort, and too often a blank is drawn for this effort. (Our membership has, as a whole, learned that this also applies to the procurement of surplus property.)

"We have all learned that our dream of the acquisition of surplus property was built on Utopian sands as we saw plan after plan, regulation after regulation and organiza-

(*Continued on page* 320)

For assured performance, the valve must suit the service!

Years ago Powell pioneered in making Cast Steel Valves to handle flow control requirements for which bronze and iron valves were not fully suited.

Later, the development of the chemical and process industries imposed new demands; namely, for valves to handle corrosive media. Again Powell blazed the trail and today, in addition to Bronze, Iron and Steel Valves of every required type size and pressure, Powell offers not only the Cast Steel but also many special designs in the widest range of pure metals and special alloys ever used in making valves.

In short, Powell is prepared to supply the *right* valve for every known industrial service. In writing for catalogs, specify whether you are interested in Bronze and Iron; Cast Steel; or Corrosion Resistant Valves. And to solve unusual flow control problems consult Powell Engineering.

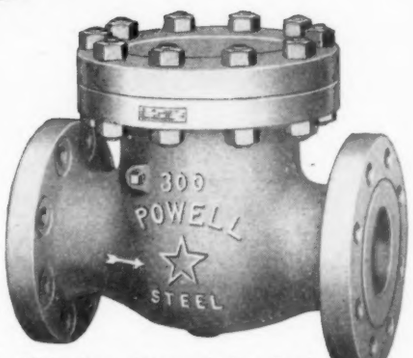


Fig. 3061—Class 300-pound Cast Steel Swing Check Valve. Flanged ends and bolted cap. Disc has ample lift to permit full, straightway, unobstructed flow through the valve body.

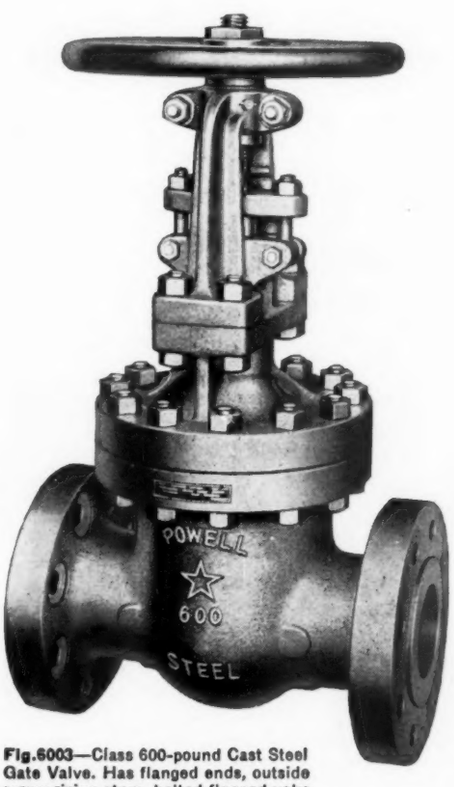


Fig.6003—Class 600-pound Cast Steel Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc.

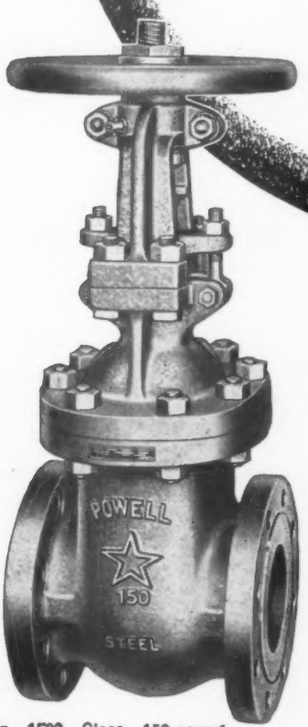


Fig. 1503—Class 150-pound Cast Steel Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke, taper wedge solid disc.

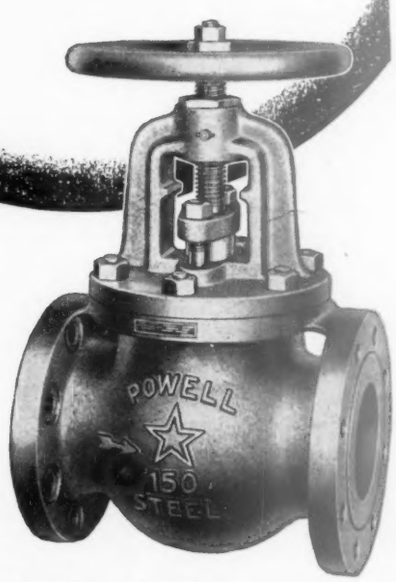
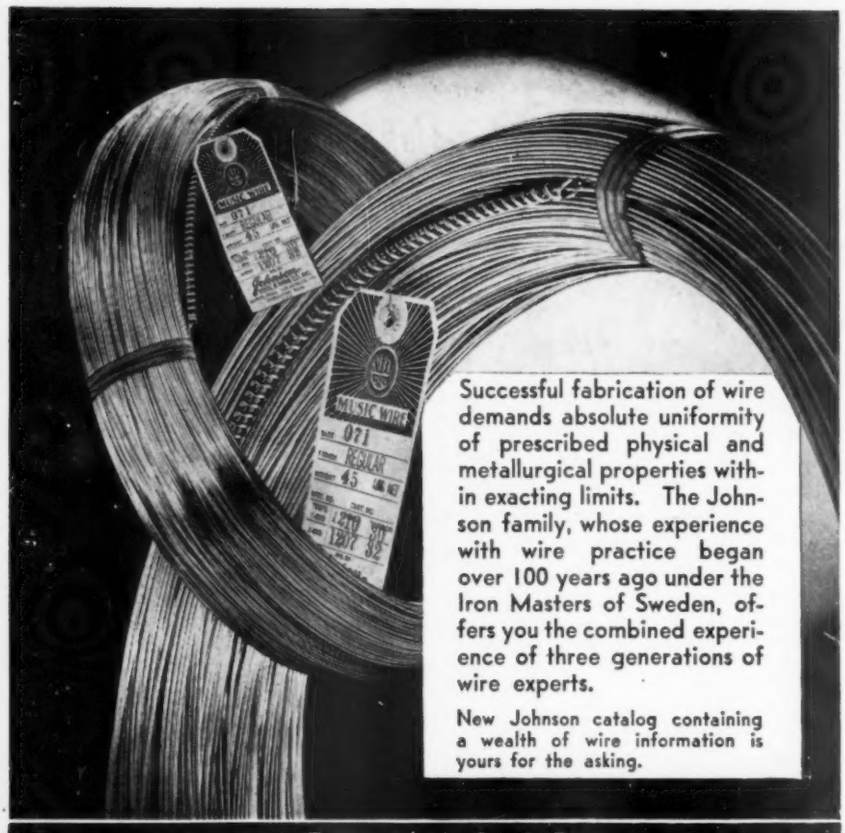


Fig. 1531—Class 150-pound Cast Steel Globe Valve. Has flanged ends, outside screw rising stem and bolted flanged yoke.

The Wm. Powell Co.
Cincinnati 22, Ohio
DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES



Successful fabrication of wire demands absolute uniformity of prescribed physical and metallurgical properties within exacting limits. The Johnson family, whose experience with wire practice began over 100 years ago under the Iron Masters of Sweden, offers you the combined experience of three generations of wire experts.

New Johnson catalog containing a wealth of wire information is yours for the asking.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER 1, MASSACHUSETTS.
NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO

OVERHEAD CRANES

200 Ton Alliance 100' Span
175 Ton Morgan 54' Span
150 Ton Whiting 30' Span
80 Ton "American" 40' 6"
75 Ton Alliance 37' Span
75 Ton Alliance 78' Span
50 Ton Cleveland 71' 10½"
50 Ton Shaw 69' 10" Span
40 Ton Alliance 82' Span
35 Ton Northern 22' Span
30 Ton Case 41' Span
30 Ton Morgan 30' Span
30 Ton Morgan 77" Span
30 Ton Niles 53' 9" Span
30 Ton P&H 80' Span
30 Ton Reading 56' Span
25 Ton Bedford 50' Span
25 Ton Cleveland 106' Span
25 Ton P&H 70' Span
25 Ton Whiting 106' Span
25 Ton Whiting 82' Span
25 Ton Whiting 56' Span
20 Ton Alliance 77' Span
20 Ton Cleveland 65' Span
20 Ton Morgan 77' Span
20 Ton Northern 60' Span
20 Ton P&H 39' 6" Span
20 Ton P&H 51' 4" Span
20 Ton Shaw 76' 4" Span
20 Ton Shepard Niles 49' 6" Span
20 Ton Shaw 76' 4" Span
15 Ton Alliance 50' Span
15 Ton Alliance 35' Span
15 Ton Cleveland 55' 6" Span
15 Ton Cleveland 35' Span
15 Ton Morgan 77' Span
15 Ton Niles 32' Span
15 Ton Northern 53' Span
15 Ton Shaw 82' Span
15 Ton Shaw 77' Span
15 Ton Toledo 82' Span
15 Ton Whiting 74' 8½" Span
15 Ton Whiting 71' 10½"
12 Ton Morgan 56' Span
10 Ton Alliance 58' 9" Span
10 Ton Alliance 71' 10" Span
10 Ton "American" 27' Span
10 Ton Cleveland 38' Span
10 Ton Cleveland 50' Span
10 Ton Emsco 30' Span
10 Ton Lane 50' Span
10 Ton Morgan 39' 5" Span
10 Ton Morgan 77' Span
10 Ton P&H 57' Span
10 Ton P&H 78' Span
10 Ton P&H 87' 6" Span
10 Ton Northern 34' Span
10 Ton P&H 48' 10½" Span
10 Ton P&H 60' Span
10 Ton P&H 80' Span
10 Ton Shaw 68' Span
10 Ton Shaw 58' Span
10 Ton Shaw 88' Span
10 Ton Northern 71' 10½"
7½ Ton Erie 70' Span
7½ Ton P&H 30' 6" Span
7½ Ton Scullin 71' 10½" Span
7½ Ton Shepard 36' Span
6 Ton Shaw 23' Span
5 Ton "American" 10' Span
5 Ton Champion 37' 6" Span
5 Ton Euclid
5 Ton Milwaukee 39'8" Span
5 Ton Milwaukee 66' 9" Span
5 Ton Milwaukee 70' Span
5 Ton Northern 49' 6" Span
5 Ton P&H 45' Span
5 Ton Shaw-Box 25' Span
5 Ton Shepard 40' Span
5 Ton Toledo 96' Span
5 Ton Whiting 80' Span
3 Ton P&H 46' 4" Span
3 Ton Shaw 33' Span
3 Ton Whiting 57' 3" Span
2 Ton Detroit 28' Span
2 Ton P&H 46' 4" Span
2 Ton Shepard-Niles 18' & 14"
1½ Ton Cleveland 25' Span
1½ Ton P&H 34' Span
1 Ton Curtis 24' Span

Take advantage of the ECONOMY service by telephoning to us *collect*, which will enable us to discuss your requirements and present our suggestions.

In addition to overhead cranes we can supply all types of shovels, cranes, draglines, tractors, for practically everything in the construction equipment field. May we have your inquiries?

ECONOMY CO., Inc.
49 Vanderbilt Avenue, New York 17, N. Y.
Telephones: MUrray Hill 4-2294, 4-2893, 4-2295, 4-2844, 4-2296, 4-8292

Educational Buyers Convention

(*Continued from page* 318)

tion after organization break apart and disappear. Much of what we expected to find was not there in usable form; was not procurable as expected or planned, was not obtainable when offered for sale.

"Have any of us not learned the meaning of frustration, double talk, and an outward friendliness and an inward indifference and the consequences of buck-passing?

"Tomorrow beckons, so lets not forget the past! There are some promising signs. Though we have knocked at the doors of administrators and lawmakers and have been turned away, we still have a few friends at court. But no matter what happens to ease the procurement of surplus property rest assured that its procurement will not be painless."

Discussion Period

There was considerable discussion about problems and conditions incident to procurement of surplus materials by educational institutions. Executive Secretary Ahrens stated that at a recent meeting effort was made to procure an improved pricing policy, provision for not less than 30-day period offer, reservation of property according to quantity required by an institution, and revision downward of minimum quantities to aid small institutions. However, it was found the matter of extending the period of offer was considered to be detrimental in that it would slow up disposal; likewise it was felt that the reservation or set-aside of material would slow things up, as would the downward revision of minimum quantities, it being held that the WAC was geared to a wholesale operation and not to what was described as retail operations.

In general, the prospects for procurement of materials needed, were not encouraging. George Frank declared that conditions are SNAFU and may grow worse. Several members stated that the only way to procure needed materials was to go out and look for them, and then "if you locate something you want, stay on the job until you get it." G. A. Force of Northwestern University said, "I haven't seen any way whereby a small institution can profit, nor have I seen much whereby a large one can profit. On the other hand there is a lot of good material over the horizon. The red tape must be removed." He expressed the belief

(*Continued on page* 322)

WINTER SERVICE IS 4fold

1. An Efficient and Helpful Distributor Organization

The Winter Brothers Distributor Organization has been carefully built to give maximum service — a service available to you for the asking.

2. Your Local Distributor Carries A Full Stock of Winter Taps

With stock shelves again fast filling up, your local distributor is performing a more important function than ever. He can give you immediate service.

3. An Experienced Engineering Staff to Cope with Your Problems

No sales organization is 100% effective without an engineering staff with the know how and research facilities to cope with new production problems — particularly threading tool problems.

4. A Quality Product Developed to Do a Better Job

This 3-Fold Service is built around a fourth—the Product.

Winter Taps make for new threading accuracy, easier cutting, higher cutting speeds and longer tap life, the result of 45 years of tap making experience and research.

You get more production at lower cost from Winter Taps. Specify them — always!

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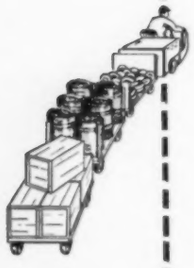
A DIVISION OF THE NATIONAL TWIST DRILL & TOOL CO., ROCHESTER, MICHIGAN

Bond 140-AH Heavy Duty Series. Rugged steel construction for heavy duty service with safety. Double ball race design. All races hardened. Swivels with frictionless ease. Pressure lubricated throughout. Available in three wheel diameters: 8", 10" and 12". Load capacities up to 4,500 pounds per caster.

Assure efficient trailer truck service with a caster that's *right* for your loads and *right* for conditions in your plant. Bond REG U.S. PAT OFF. 140-AH is a built-for-the-job structural steel caster that's easy-swiveling and practically indestructible. It's built to take a beating... built to take the turns... do the job *right*. Get the caster that's exactly right. Get Bond REG U.S. PAT OFF. Send for catalog now—it's free!



BOND FOUNDRY & MACHINE CO.
MANHEIM, PA.

Educational Buyers Convention

(*Continued from page* 320)

that the best materials will never get into surplus so far as the educational institutions are concerned, as other organizations are "taking their choice and what is left is not of suitable quality."

It was also stated that the Army and the Navy programs are rather stymied at the present. Chairman Abbett of the Surplus Property Committee said, "As we struggle with this problem we are confronted with the fact that in education there is no unified front, though there is more of a unified front in the EBA group than in any other. Because of lack of unification, the voice of education is not heard. Other organizaions which present a well unified front are getting consideration, but as long as education does not present a unified front, it will have difficulty making itself heard."

It was announced that invitations had been received from two sources to hold the 1947 E.B.A. convention in their respective locales; and in addition, Charles Hoff, business manager, University of Omaha extended an invitation from the floor "to come to the Midwest and hold the next convention in Omaha." The invitations will be analyzed by the executive committee for decision as to which will be accepted.

The Report of the Resolutions Committee, presented by Claude L. Hough, Jr., Principia College, included a vote of thanks and appreciation to William G. Morse, Purchasing Agent, Harvard University, twice president of the association, who is retiring as of June 30th, for his 20 years' of untiring effort on behalf of the E.B.A. Mr. Morse, who became Purchasing Agent for Harvard University in 1924, is the only member of the association to have been twice honored with the office of president.

* * *

FIRST NATIONAL INSTRUMENT SHOW

The "Instrumentation for Tomorrow" Exhibit, sponsored by the Instrument Society of America, will be held on the 17th floor of the Wm. Penn Hotel, September 16-20, 1946 concurrently with the Society Conference.

The Exhibit will show the latest developments in industrial and scientific instruments for research, analysis, measurement, control, inspection and testing; and the multitude of devices, products and materials of the industries serving the instrument industry.

If precision is your problem, sleeve bearings will solve it to the fullest extent... In modern aircraft engines and their superchargers—on the spindles of precision machine tools—where precision is paramount—Bunting Cast Bronze sleeve bearings are used...Versatile in design and alloy, Bunting Bearings offer advantages which we would like to discuss with you.

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42

Precise finishing of "HARD-TO-REACH" SPOTS calls for... American Swiss Files

Whenever you require precise finishing of a small intricate part or assembly, you'll find an "AMERICAN SWISS" Swiss-Pattern file exactly suited to the job.

Among the more than 3000 shapes, cuts and sizes of "AMERICAN SWISS" files, some are designed for coarser, heavier work — others are made to tolerances as close at ± .002 in. — and all are manufactured from finest *file* steel.

When you specify "AMERICAN SWISS" files, you are selecting a precision tool of uniform hardness, with keen filing edges that cut faster and do better work. These are some of the reasons why "AMERICAN SWISS" files have been the choice of leading tool and die makers and experienced machinists for more than 45 years.

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AMERICAN SWISS FILE & TOOL CO.
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ONLY THE BEST FOR GOOD WORK

ASK FOR THEM BY THIS NAME

American Swiss

SWISS PATTERN FILES

Specification Program

(*Continued from page* 133)

may reconvene to reconsider any changes of their original recommendation which are deemed desirable, although this is not mandatory. Having obtained the Board's approval, the Executive Vice Chairman will proceed with the promulgation of the specification as an approved Federal specification in conformity with applicable requirements of the Charter, dated September 18, 1945 and of the Regulations Governing the operations of the Federal Specifications Technical Committee dated October 16, 1945. The approved urgently needed specification will, following initial promulgation by reprocessed by the Technical Committee, circularized for Industry and government under the Charter and Regulations, for republication as a regular revised Federal specification. There shall be included in the urgently needed specifications a statement to the effact that specification will be reconsidered as soon as the unusual Federal need for the procurement involved is over, and a regular revised specification will be issued instead.

* * *

Government Service For the Asking

(*Continued from page* 110)

for services. If there is a large demand for one particular type of published reports and a negligible call for another, greater emphasis will be placed on the more useful type of material.

This analysis is facilitated by the fact that requests for business service material must be selective and specific. Government regulations no longer permit blanket service in response to requests for "all regularly issued free material". It is possible, however, to be placed on a permanent mailing list for material or reports that are issued periodically or on a recurring basis, by specifying the title or subject of the material desired.

Included on the Check List are the publications originating in the Bureau of Foreign and Domestic Commerce, Bureau of the Census, Civil Aeronautics Administration, Patent Office, Coast and Geodetic Survey, Office of Declassification and Technical Services, Weather Bureau, and the National Bureau of Standards. And in addition to the special reports and research papers. it includes the standard periodicals such as the Foreign Commerce Weekly, monthly Survey of Current Business, and Domestic Commerce monthly.

The Check List is still in an experimental phase. Nominally, its circulation is restricted to chambers of commerce, trade associations, trade publications, and business research and public libraries. Local organizations of purchasing agents would certainly come within these classifications.

On the other hand, individual applicants who have an active interest in Department of Commerce reports can receive the Check List regularly at a cost of $1.00 for one year. Checks are made payable to "Treasurer, United States of America", weekly issues of the Business Service Check List write to Albert J. Lubin, Chief, Distribution and Field Service, Room 3880B, Department of Commerce, Washington 25, D.C.

* * *

Better Materials Handling

(*Continued from page* 95)

product proceeds toward completion, these factors change. And when they change, maybe different handling equipment will enter the picture.

Plant Factors

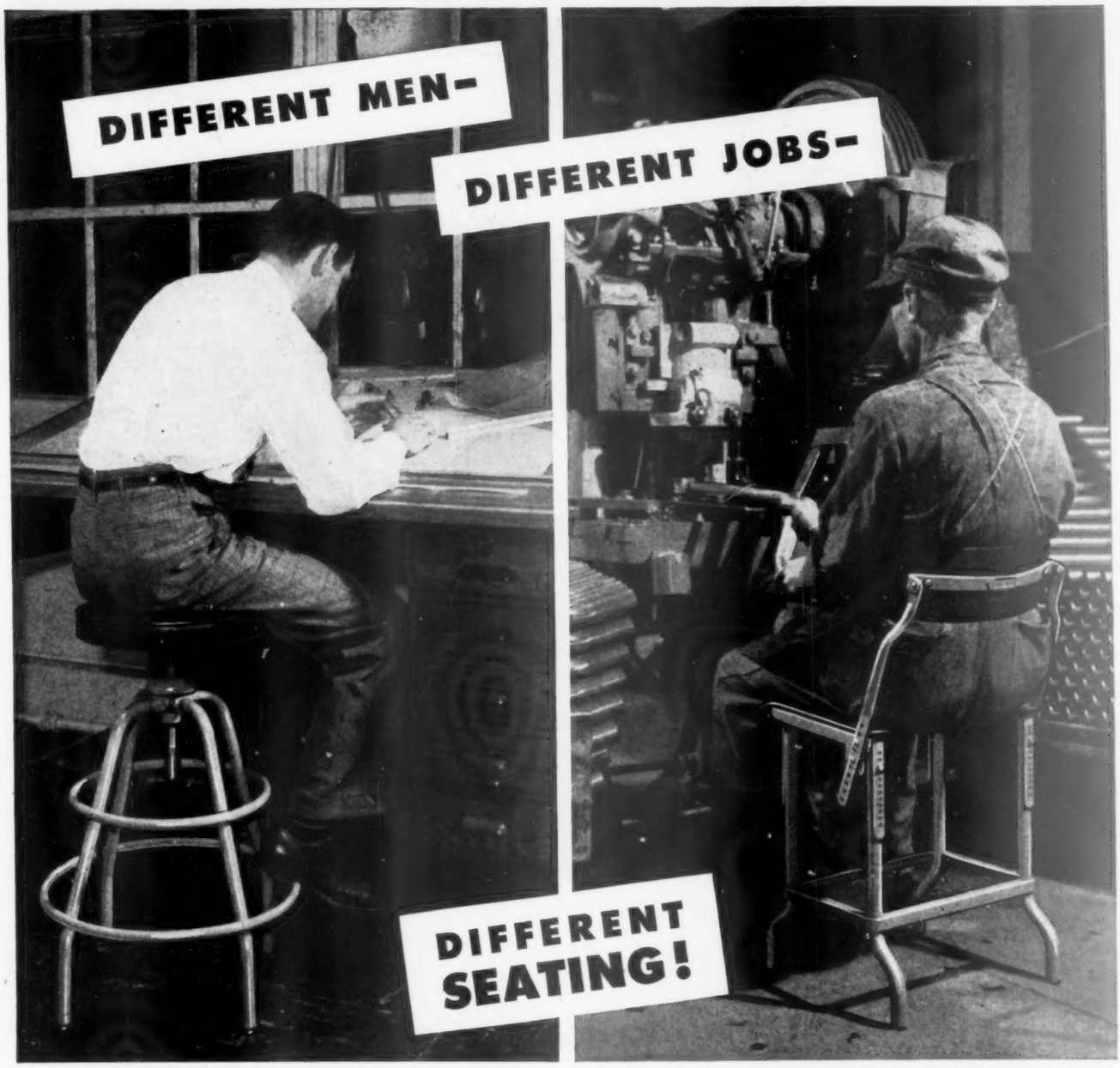
Now let's get down to some of the physical aspects of the plant that he has to know about.

How wide is the narrowest aisle? This has to be part of his figuring because the size of his loads is limited by it. Yes, he may even have to konw the lowest ceiling height for the same reason. And that goes for doorways and elevators too, whether he is looking at the loading platform, production area, or the warehouse.

You can add to this type and condition of floor, yard or road surface—wherever material has to be moved. And he won't dare forget the dimensions of all storage areas, number of ramps and their rise, and all the physical characteristics of receiving and shipping docks. He will have to know how much weight a square foot of floor space will take, or he may be headed for trouble.

Last but not least, he has to set down whether goods are received and shipped by rail, truck or boat.

This looks like a pretty big order —and it is. But unless material handling operations are properly recorded, analysed, and interpreted, you can't take the kinks out of production and you can't improve your cost picture.



Harter Stool HN-14

Harter Posture Chair 30Z

The draftsman can't work at top efficiency sitting bolt upright. The punch press operator must sit erect to run his machine properly and safely. The moral is plain: Different men doing different jobs require different seating.

Harter builds the right kind of seating for every kind of job—in plant, shop, and office. Each model is fully adjustable to the specific requirements of the job and the worker. All-steel frames, precision-fit construction, and foolproof adjustments insure long years of trouble-free service.

Employees like the custom-built comfort of Harter industrial seating. You'll like the way it increases efficiency. No matter what your seating requirements, Harter will help you meet them. Call on your Harter dealer, or write to us, for advice and information. Industrial Seating Dept., Harter Corporation, Sturgis, Michigan.

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INDUSTRIAL SEATING

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Sinews of Industry
in the Making
ALLIED "to Win in War or Peace"
STRUCTURAL STEEL COMPANIES
3 FABRICATING PLANTS
with Combined Facilities
Working as one Huge Operation
for THE MEN WHO "Button Up" THE SINEWS OF INDUSTRY
To men on location who must rivet or weld the sinews of industry according to details of the building layout, Allied offers help, as well as to the architects and engineers who design the structures.
Many fabricating and erection short-cuts have been learned during war years, and Allied engineers are glad to co-operate in interpreting plans quickly and in super-fast assembly of precision units fabricated for the job.
This Allied experience working in harmony with contractors and engineers can but result in economies wherever steel structures rise. Let Allied team with you in fabricating and erecting the steel for your buildings.
ALLIED STRUCTURAL STEEL COMPANIES
ENGINEERS
FABRICATORS (75,000 TONS CAPACITY)
ERECTORS
CLINTON BRIDGE WORKS, 101 S. Second St., Clinton, Iowa
GAGE STRUCTURAL STEEL CO., 3123-41 S. Hoyne Ave., Chicago 8, Ill.
MIDLAND STRUCTURAL STEEL CO., 1300-20 S. 54th Ave., Cicero 50, Ill.

(Reproduction of advertisement appearing in Fortune Magazine)

Foundations of Purchasing

(Continued from page 105)

background of preparation, very little.

There never was a more trying time for the buyer than the present. Price is one of the bottlenecks. Some persons may know all about prices, but little if anything about values. A sound economy is built upon true values. It will remain sound and secure only so long as prices and values are in proper relationship.

True heroes do very little flag waving, but they do possess hidden qualities which spur them on to deeds of valor as unhesitatingly as most of us pursue the simple tasks of life. For the most part, such qualities reflect long preparation, and their blossoming into action is a perfectly natural result. The measure of a man may sometimes be determined by the nature of his *extra curricular* activities. An excellent article by one of our N. A. P. A. officers in a recent issue of this magazine touched upon this fact. It is heartening to observe the number of purchasing men, distinguished by their community interests.

We have not—and in all probability we never will, in this imperfect world—reach a millennium where the warning "Caveat Emptor!" may no longer apply. It is not, however, the rule of the day. We might in all seriousness raise the question as to when that admonition did most forcibly apply, particularly in the field of industrial purchasing. We have gone a long way in the realm of a better understanding and a sounder ethical relationship between those who buy and those who sell.

Good will, which is one of the most powerful assets that any concern may enjoy, reflects long preparation. It has tangible values, that are recognized as such by the courts.

Yes, there is a vast amount of preparation necessary to the release of power. Those of us who are fortunate enough to be members of the National Association of Purchasing Agents can, if we will, tie into this source of power. Association values, too, are measurable and approved repeatedly by purchasing men. We should all applaud the educational program of that organization. It is a carefully planned and effective method of preparation for this challenging task of industrial purchasing. It is a prelude to the increasing recognition of purchasing as a vital part of management.

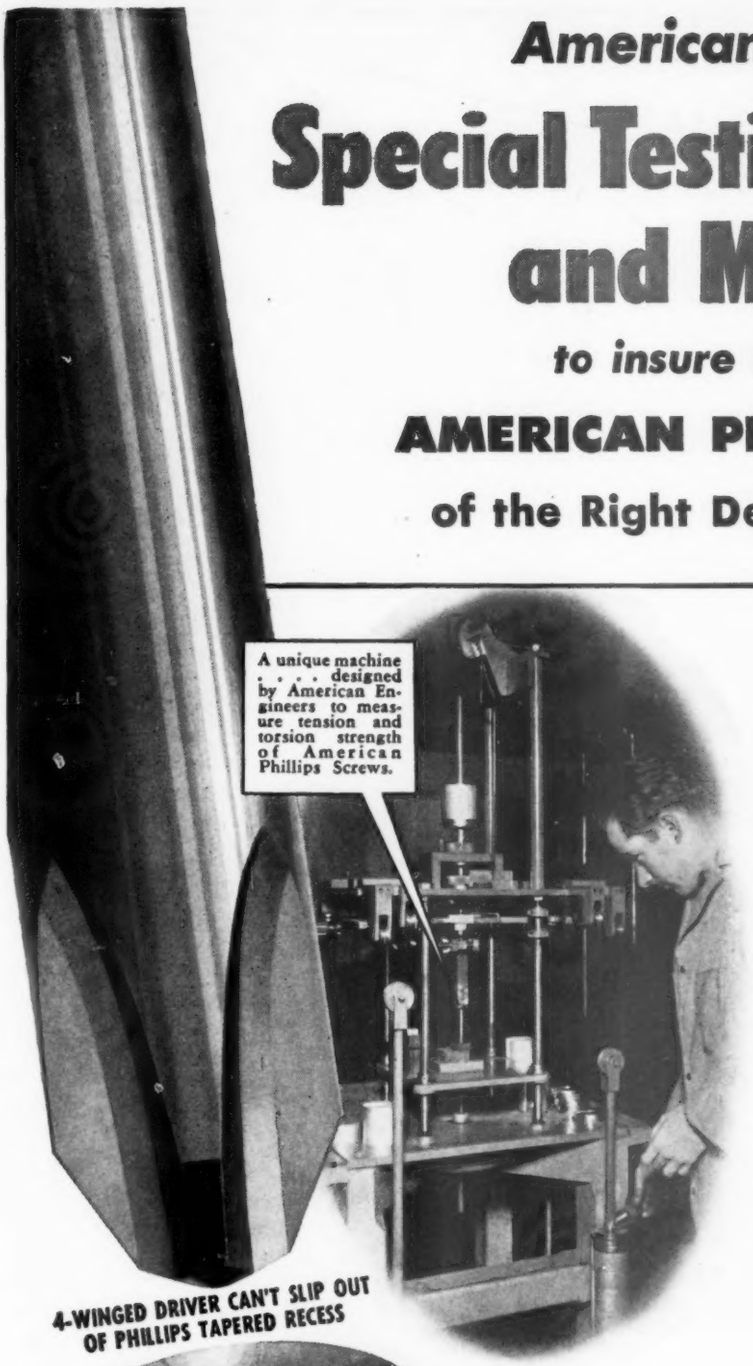
American Develops

Special Testing Machines and Methods

to insure that <u>you</u> get

AMERICAN PHILLIPS SCREWS

of the Right Design for Your Job



4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

Make American's Engineering Research Laboratory your own "*Information Center*" on any fastening problem. Find out, according to your own job-requirements, what combination of type, size, head, metal, and finish will give you the American Phillips Screw that will do your job at highest speed, at lowest cost, with most lasting satisfaction.

American engineers will determine for you the answers to questions on metallurgy, physical strengths of metals, heat-treatment, heat-resistance, corrosion-resistance, electrolytic action, suitability of different plates and finishes, on the basis of actual test. And in these answers you will find *extra savings* to add to the regular American Phillips advantages of fast, easy, straight driving with power drivers . . . vanished spoilage losses . . and total time-savings that can run as high as 50%. *Write:*

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois Street *Detroit 2:* 502 Stephenson Building

AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Commercial Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

Harvey N. Wood, District Commercial Manager of Graybar Electric Company, discussing the renewal of their lamp contract with Norman W. James, General Purchasing Agent, Pennsylvania Salt Manufacturing Company, Philadelphia.

"The P.A. Is Our Channel to Industry!"

"From 34 years experience in industrial selling," states Mr. Wood, "I am convinced that the surest way to consummate a successful sale is to tell our whole story directly to the Purchasing Agent."

Practically every successful salesman will agree with Mr. Wood. The P. A. has the final say that clinches the sale. Most companies like Mr. Wood's are taking advantage of one direct way to tell their story regularly . . . in the pages of PURCHASING – the purchasing agent's own magazine. Your advertising in this publication is your salesman's advance guard – familiarizing the P. A. with your product.

For complete facts regarding this productive, economical magazine, write PURCHASING, 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland and Los Angeles.

PURCHASING

ABC ABP

A CONOVER-MAST PUBLICATION

Everyone benefits from this type of TEAMWORK . . .

The manufacturer-distributor-user distribution policy in industrial selling has been successful because it follows a sound economic principle. But the term "user" must be brought into focus if distributor effort is not to be wasted in attempted backdoor selling.

The focal point, as evidenced by the experience of Mr. Wood and thousands of others like him, is the Purchasing Agent.

Every month, advertisements like the one at the left are pointing out to management and sales executives the importance of concentrating their efforts on the man who has the "Yes" or "No" in industrial purchasing.

Look to TRUMBULL
AS YOUR DEPENDABLE SOURCE OF SUPPLY

ISOLATION OF CONTROL

Many industrial atmospheres are enemies of electrical control apparatus. The presence of dirt, dust, vapors, moisture, etc., may make it advisable to locate only a minimum amount of control equipment in your actual working areas. Motors . . . YES; Push buttons for start and stop of such motors . . . YES; but actual Control, Disconnect, Short Circuit and Over-Current Protection . . . NO.

These functions can be located AWAY from actual working areas, where apparatus can be installed without sacrifice of productive square feet . . . and where maintenance and inspection are facilitated.

In other words, Trumbull will take your safety switches, circuit breakers, controllers and main bus bar structures . . . wrap them up in Steel . . . and build you a Control Center to be located *away* from *trouble*.

TRUMBULL CONTROL CENTER ISOLATED FROM WORKING AREA . . . AWAY FROM TROUBLE

CALL YOUR TRUMBULL
Electrical Wholesaler

THE TRUMBULL ELECTRIC MFG. CO • PLAINVILLE, CONN.
OTHER FACTORIES AT NORWOOD, O. — SEATTLE, SAN FRANCISCO, LOS ANGELES

Time to prepare for HOT WEATHER PRODUCTION!

The hot weather months are at hand . . . months when factory output must be kept to a maximum to catch up on domestic demands! Make sure that workers will be fit and energetic — keep plenty of cool water available throughout your plant. The most sanitary method is with Halsey Taylor Coolers and Drinking Fountains, industry's choice for years and years. Get our latest catalog!

THE HALSEY W. TAYLOR CO., Warren, O.

HALSEY TAYLOR
DRINKING FOUNDATIONS

F-3

Consumer Goods Surpluses

(*Continued from page* 106)

age of typographical errors creep in, with resulting delays running into days while new or corrected documents are prepared.

In addition, no sale can be consummated until the involved form of contract is completed. Putting it another way, delivery of property to buyer is delayed until such time as the myriad of administrative and clerical details, inherent in all government operations, are properly taken care of.

This whole irritating problem could be solved by substituting a simple, improvised sale record form and releasing property at site upon payment of purchase price; allowing internal administrative details of government to be taken care of at any future time convenient to the operation.

These are just a few of the innumerable obstacles standing in the way of quick disposition of war surplus property. The whole job is so hot, from a political standpoint, touching as it does upon the normal acquisitive instinct of millions, that the administration has changed directing personnel, methods, and government agency handling four separate times within two years.

Starting out as a collateral duty of the Treasury Department's Procurement Division, the activity has moved consecutively to the Department of Commerce (Office of Surplus Property), the Reconstruction Finance Corporation (War Assets Corporation), and now is labeled the War Assets Administration.

Directing personnel has come from the top levels of the country's merchandising experts, yet change after change in policies and administration have become necessary to still the flood of criticism from pressure groups and the general public. Now the last word seems to have been spoken when the President finally appointed a former Quartermaster General of the Army (General Gregory) to head the newly created War Assets Administration. As the general admits to having bought most of the war property, he should have definite ideas on how to dispose of it.

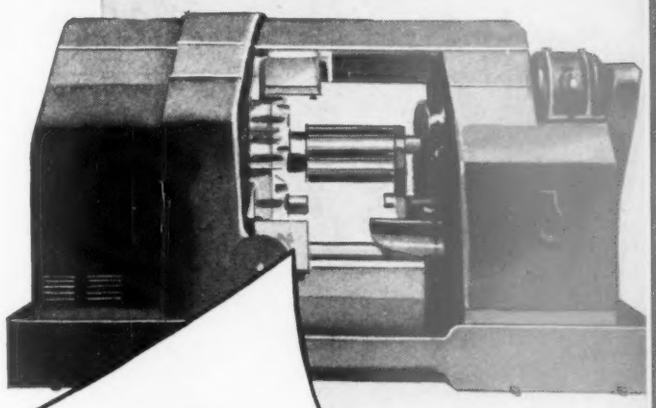
Whether an army trained man can break the bottlenecks of government red tape (and hold off the pressure groups with their Congressional backing), and thus succeed where those from private business made indifferent progress, is a question soon to be answered. The struggle is now on.

SPECIAL LATHE BUYS!

KEY	TYPE	SIZE OR CAPACITY	QUANTITY AVAILABLE NOW
A	Heavy Duty Mfg. and Prod. Multi-tool, not automatic	Up to 20" swing	788
B	Single Spindle, Horizontal, Platten type		63
C	Single Spindle, Horizontal, Turret type		280
D	Multi Spindle, Horizontal	4 to 8 Spindles	1,518
E	Multi Spindle, Vertical	6 to 8 Spindles	202
F	Auto. between centers chucking, horiz. single spindle	All sizes	2,036
G	Speed Lathes	1/6 to 5 HP	2,070
H	Turret Lathes	All sizes	144

D Multiple Spindle Horizontal Lathes

These 4, 5, 6 and 8 spindle machines or equivalent (see table) are located in Chicago, Cleveland, Detroit, Nashville and St. Louis offices of War Assets Administration. Ask any W. A. A. office.



GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

LATHES

An immediate source of additional or more modern production equipment is the large inventories held by the War Assets Administration. Built for war, basic machine tools such as these lathes are ready to serve in peace. Hundreds of items are available now, priced for quick sale. You can do yourself and America an important service by putting this idle production capacity to work as quickly as possible. Check this and the following three pages carefully and act at once to secure equipment you can use profitably.

A Heavy Duty Mfg. and Prod. Multi-tool Lathe (not automatic). These heavy duty production tools are available in quantity in Detroit, Chicago, Boston, and New Orleans offices of War Assets Administration. For details contact any W. A. A. office.

Veterans of World War II— To help you in purchasing surplus property, veterans' units have been established in each War Assets Administration Regional Office.

MAIL TODAY*

To War Assets Administration:

Please send me information on the types of lathes checked at the right. I am also interested in the availability of the following types of lathes not listed in this advertisement:

.....

.....

.....

Name.....Telephone No.....

Firm.....

Address.....

City.....State.....

**For War Assets Administration address, see 4th page of this advertisement.*

277-4

LATHE CHECK LIST

(These key letters correspond to the machines listed in the table above. Simply check those in which you are interested.)

A___ B___

C___ D___

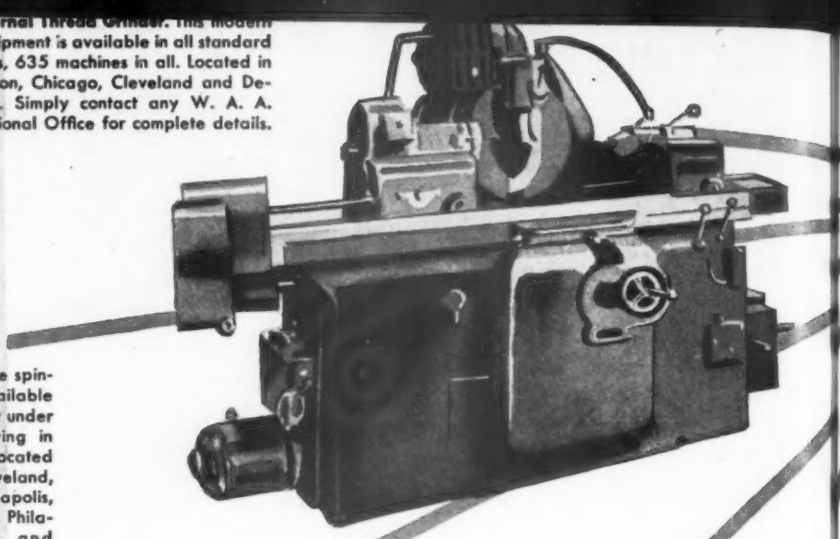
E___ F___

G___ H___

277-4

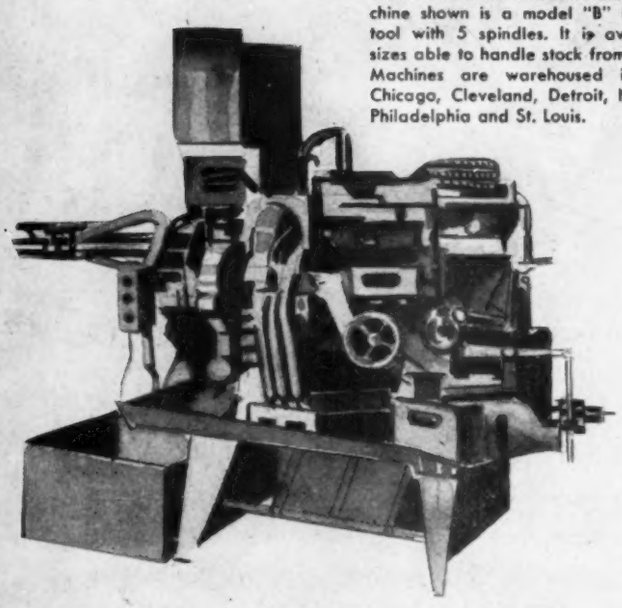
Bench Drill. Sensitive, single spindle, round column type; available up to 22" swing in capacity under ½"; from 16" to 24" swing in capacity from ½" to 1". Located in Boston, Birmingham, Cleveland, Charlotte, Detroit, Minneapolis, New York, Oklahoma City, Philadelphia, San Antonio and St. Louis Regional Offices.

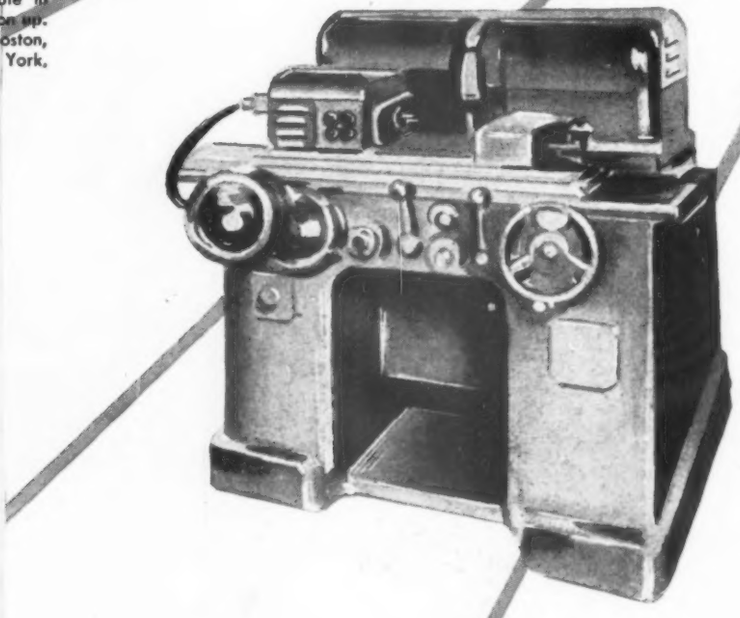
External Thread Grinder. This modern equipment is available in all standard sizes, 635 machines in all. Located in Boston, Chicago, Cleveland and Detroit. Simply contact any W. A. A. Regional Office for complete details.

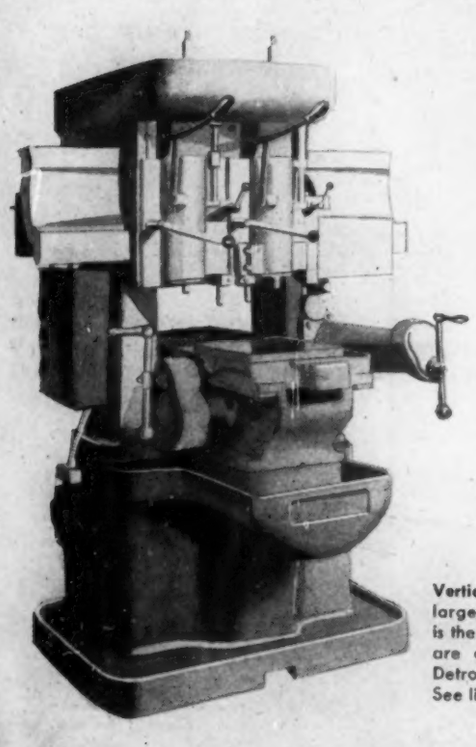


External Cylinder Grinder—Plain. This is a Norton model but other makes are also available. Total inventories in Boston, Chicago, Cleveland, Detroit, Philadelphia and St. Louis amount to 1730 machines.

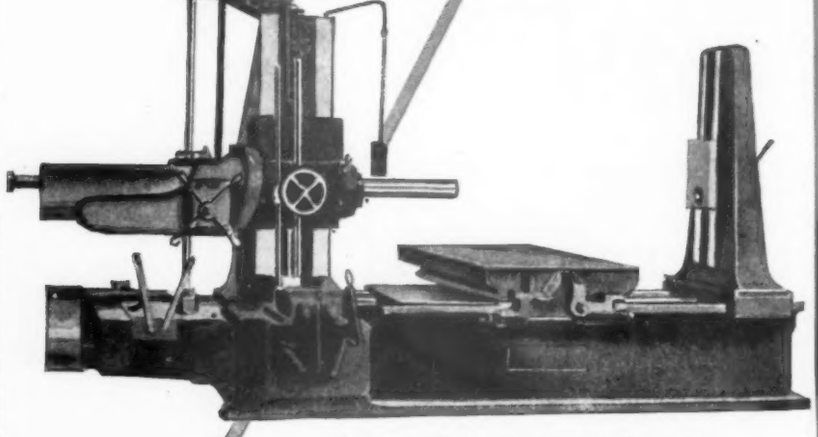
Automatic Screw Machine-Bar. The machine shown is a model "B" Davenport tool with 5 spindles. It is available in sizes able to handle stock from 1" on up. Machines are warehoused in Boston, Chicago, Cleveland, Detroit, New York, Philadelphia and St. Louis.







Vertical Profiler—2 spindle type. Typical of a large number of 1, 2, 3, and 4 spindle machines is the milling machine shown here. These machines are available in Boston, Chicago, Cleveland, Detroit, New York and other Regional Offices. See list (next page) for other types also in stock.



Horizontal Boring, Drilling and Milling Machines. Here is another illustration of a machine typical of an entire class of machine tools available in large quantity at many W. A. A. Regional Offices, in standard makes and sizes.

BASIC TOOLS

GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

(second in a series of 4-page advertisements designed to inform industry of available machine tool surpluses)

Here, by the hundreds, are the tools you need to modernize your production and establish new enterprises—available *now* at low cost—at a time when a war-devastated world is exerting the biggest demand for goods and services ever known. You owe it to yourself, your organization, and your fellow men to put this productive capacity to immediate use. So check this list carefully. Find out which of these basic tools will help you solve immediate production problems. Then clip and mail the expediting coupon to the nearest War Assets Administration office listed on the next page. War Assets Administration is a government agency specially created to help you apply War Surpluses to post war needs.

CHECK LIST OF SPECIAL MACHINE TOOL BUYS!

Here are a few of the many thousands of machine tools now available through War Assets Administration.

KEY*	MACHINE (function)	TYPE	SIZE OR CAPACITY	Quantity Available Now
A—	Grinders	Race Radius—External		118
B—		Race Radius—Internal		72
C—		Contour Profile		75
D—	Screw Machine	Auto—Bar—Single Spindle	Up to 1½" cap.	775
E—	Screw Machine	Auto—Bar—Five Spindles	All sizes	1515
F—	Screw Machine	Auto—Bar—Eight Spindles	1½" and Over cap.	380
G—	Engravers	Pantagraph—2 Dimensions		70
H—	Honers	Internal—Horizontal	Under 6" Bore	175
I—		Internal—Vertical		129
J—	Lapping	Flat Surface Only	24" Diam. lap plate	107
K—	Polishers & Buffers	Floor Type	½ to 10 H.P.	1479
L—	Lathes	Speed Type	Up to 3 H.P.	1490
M—	Saws	Circular Cut-off		250
N—	Abrasive Machine	Belt Drum & Disc		580
O—	Abrasive Cut-off			112
P—	Tapping	Vertical—1 & 2 Spindle		457
Q—	Tapping	Horizontal—1 Spindle		259
R—	Die Threading	Belt Rotary—1 Spindle		390
S—	Centering	Double End—Horizontal		112
T—	Pointing, Chamfering & Burring			141
ZZ—	Gear Shapers	External & Internal	Up to 40" Diam.	
		Spur—External only		
PP—		Spur & Helical—External & Inte		
QQ—		Spur & Helical—External only		
RR—		Bevel Type not inc. Plainer Type Str. B		
SS—	Gear Cutters	Generating Type Grinding		
TT—	Gear Tooth Finisher	Formed Wheel Type		
UU—		External only		
VV—	Gear Tooth Lapper	Comb. External & Internal		
WW—	Gear Tooth Shaver	Rotary Type		
XX—	Grinder	External Cylinder—Plain		
U—	Shaver	(Not Gear)		104
V—	Reamer	(Not Rifle)		516
W—	Drawing Machine		100,000# and over	21
X—	Machinery & Equipment Allied to Primary Metal Forming Machine and Equipment	Pickling	All sizes	149
Y—	Straight Side Presses	Vertical—Single Action	5 to 100 Tons	165
Z—		Vertical—Double Action	5 to 100 Tons	111
AA—	Flame Cutting Machine			1631
BB—	Hardness Tester	Brinell—Portable & Power		200
CC—		Rockwell—Manual & Power		425
DD—	Inspection Machine	Magnetic (Magnaflux)		601
EE—	Balancing Machine	Static		93
FF—		Dynamic		67
GG—	Boring, Drilling & Milling	Horizontal	Under 3" to 6"	209
HH—	Boring & Turning Drills	Vertical	Under 36" to 120" Swing	683
II—	Boring Fixed Rail Tank Mill	Vertical		87
JJ—	Precision Boring Machines	Horizontal bridge—single end	Under 8" to 14"	486
KK—		Horizontal bridge—double end	Under 8" to 14"	226
LL—	Drills	Box column—single spindle	Under ½" Cap.	
			Up to 22" Swing	287
			½" to 1" Cap.	
			16" to 24" Swing	
MM—				
NN—		Round column—single spindle	Under [illegible]	
OO—				
[illegible]				
	Gear Hobber	Spec. Kingsbury Way & Vertical	Up to 32" Swing	161
		Horizontal	4" to 16" Cap.	296
				250
				321

*KEY letters are provided for your convenience in filling out the coupon to the right. They do not refer to any other listing of surplus property. If used in contacting War Assets Administration Regional Offices by letter, wire or phone, please refer to this advertisement.

EXPEDITING COUPON

Use this coupon to conserve your time. Circle by key letters the machines in the above group in which you are interested and mail to your nearest W. A. A. Regional Office.* We will determine in advance our stock situation on the machines and inform you quickly, without obligation.

To War Assets Administration:*
Do you have in surplus stocks the following circled machine tools? Where are they located? What is their condition?

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, BB, CC, DD, EE, FF, GG, HH, II, JJ, KK, LL, MM, NN, OO, PP, QQ, RR, SS, TT, UU, VV, WW, XX, ZZ.

I am also interested in the following machine tools not included in your list:.....

.....

.....

.....Tel. No.....

Name.....

Firm.....

Address.....State.....

City.....

*For War Assets Administration address, see 4th page of this advertisement.

277-4

All items shown on this and preceding three pages are offered subject to prior sale. This surplus property has previously been advertised and offered to prior claimants including Veterans of World War II.

MILLERS

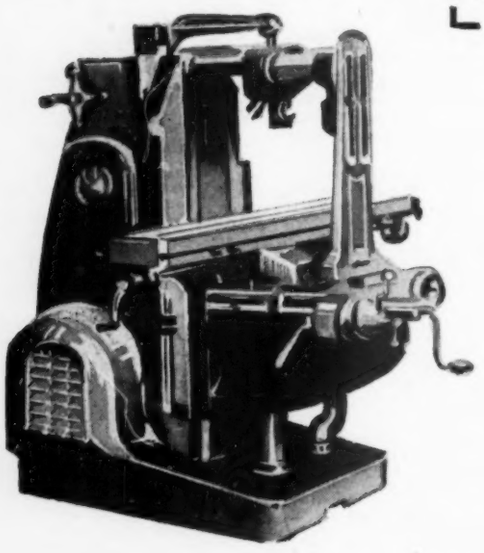
A Horizontal Hand-Feed Millers

For this and all the machine tools shown in this advertisement, simply contact your nearest War Assets Administration Office listed below, using the coupon provided. That office will know that large inventories of this miller, for example, are available in Boston, Detroit, Kansas City, and New York and how to get one or more for you.

GOVERNMENT-OWNED SURPLUS PRODUCTION EQUIPMENT

These milling machines, and the other surplus machine tools shown on the preceding 3 pages, were productive enough and modern enough to win history's biggest war. They were versatile enough to turn out some of the most intricate weapons of all times. As they stand—some used and some unused—they are the largest untapped source of peacetime productivity and profits in the U. S. today. With them you can modernize and speed up your production or establish new enterprises at lowest cost. And it's easy to do. As a first step in acquiring these machines, simply fill in and mail the coupons on this or the preceding 3 pages.

B Horizontal Miller (knee type) *These machines are located in quantity as follows:* #1; under 28" Table Travel; New York, Boston, Detroit. #2; 28" to 34" Table Travel; Detroit, Cleveland, Boston. #3; 34" to 42" Table Travel; Detroit, Cleveland, Chicago and Philadelphia. #4; 42" to 50" Table Travel; Detroit, Cleveland. #5; over 50" Table Travel; Detroit, Cleveland, Chicago.



FREE INFORMATION

To War Assets Administration:

Without obligation, please send me detailed information on the milling machines checked at the right and on the following types not included in your list:

.....

.....

.....

277-4

MILLER CHECK LIST

(These key letters correspond to the machines listed in the table above. Simply check those in which you are interested.)

A	E	I
B	F	J
C	G	K
D	H	L

Name.....

Tel. No.....

Firm.....

Address.....

City.....

State.....

SPECIAL MILLING MACHINE BUYS!

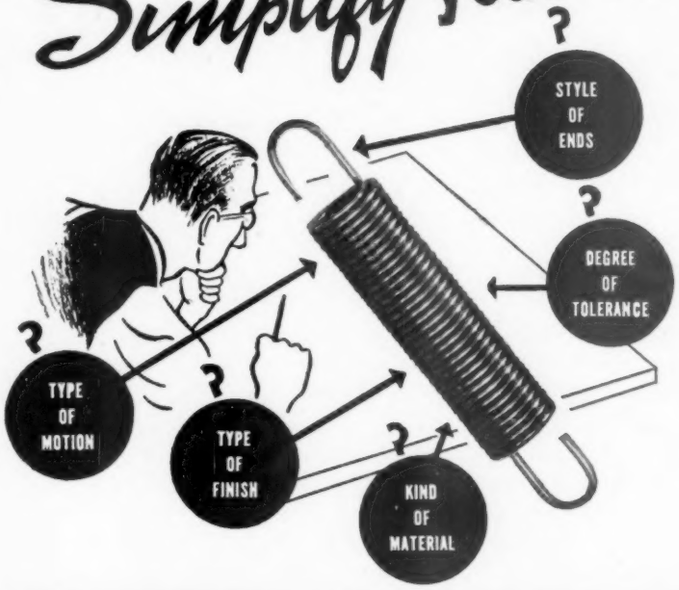
KEY	TYPE	SIZE OR CAPACITY	QUANTITY AVAILABLE NOW
A	Horizontal, Plain, Hand Feed	All sizes	564
B	Horizontal, Plain, Knee Type	#1 to #5	2,125
C	Vertical, Universal	#1 to #5	847
D	Auto Millers	All sizes	455
E	Bed Type, Plain, Horiz. Spindle	All sizes	2,703
F	Vertical Spindle, standard	All sizes	428
G	Vertical Fixed Bed Profiler	1 and 2 Spindles	847
H	Thread Millers—Universal (non-auto)	12" Work Dia. and up.	76
I	Thread Millers—Universal (auto)	Up to 20"	238
J	Thread Millers—Chucking (auto)		207
K	Planetary Milling Machines	6" Work Dia. and up	206
L	Spline Millers		248

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver • Detroit Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia • Portland, Ore. • Richmond St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Cincinnati • Fort Worth (Tel. 3-5381)

Simplify your SPRING purchases



LET RAYMOND RECOMMEND a spring with two important objects in view:

1. Best results in operating efficiency
2. Greatest economy in manufacture

You save the time and expense of "trial-and-error" methods. You get the advantage of wide experience in the selection and use of spring materials, platings and finishes. And you benefit by production facilities newly enlarged to give even better service, whether your order is large or small.

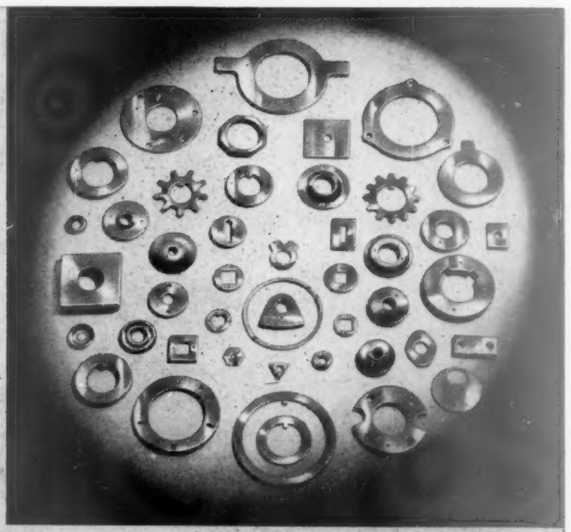
Call Raymond engineers in at the beginning of your spring plans for quick, dependable results.

RAYMOND MANUFACTURING CO.
DIVISION OF ASSOCIATED SPRING CORP.
CORRY, PENNSYLVANIA

RAYMOND SPRINGS

WASHERS...

STANDARD AND SPECIAL
Every Type . . . Every Material
Every Purpose . . . Every Finish
OVER 22,000 SETS OF DIES



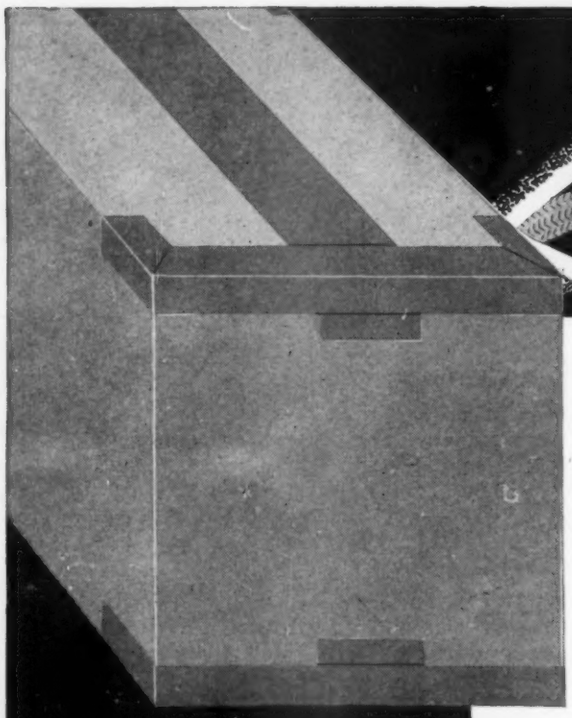
★

...STAMPINGS

OF EVERY DESCRIPTION
Blanking . . . Forming . . . Drawing . . . Extruding
Let us quote on your requirements . . .

WROUGHT WASHER MFG. CO. *The World's Largest Producer of Washers*
2113 SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN

MILWAUKEE WROT WASHERS



SAFETEX GUMMED TAPE

does a better job!

IT'S STRONGER

Because it is made from northern kraft.. the longer, stronger fibres of northern grown woods, produce a paper noted for its toughness and strength.

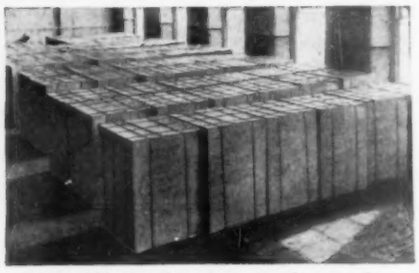
Only the best of this stock.. made especially for gumming purposes and meeting rigid requirements for constant uniformity, color, finish and formation is used in SAFTEX TAPE.

Look For This PULL TAB OPENER In Every Roll Saves Time & Money

YOU CAN SHIP SAFELY WITH **SAFETEX** — "WRITE FOR NEAREST PAPER MERCHANT DISTRIBUTOR"

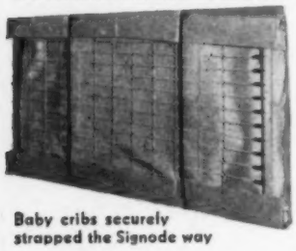
CENTRAL PAPER CO., MENASHA, WISCONSIN

LCL shipment with Signode bulk loading protection



Wool blankets in cartons—steel strapped

Bundling auto springs with Signode Steel Strapping



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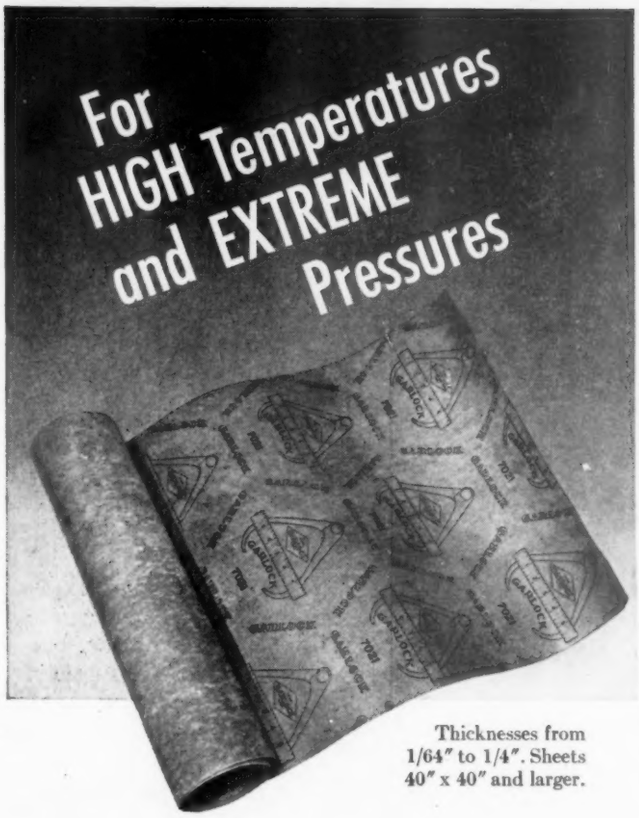

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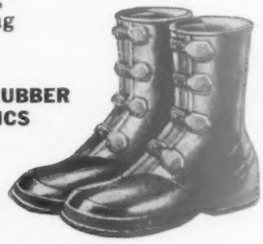

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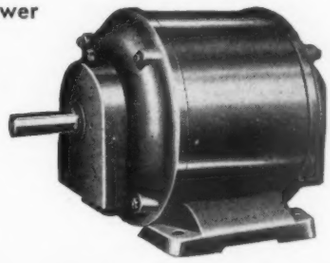

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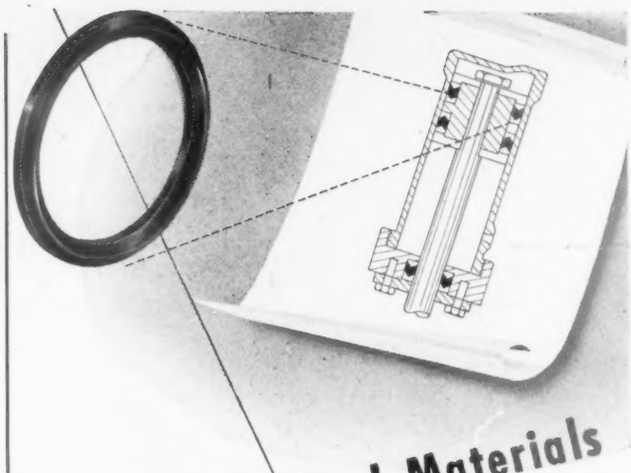

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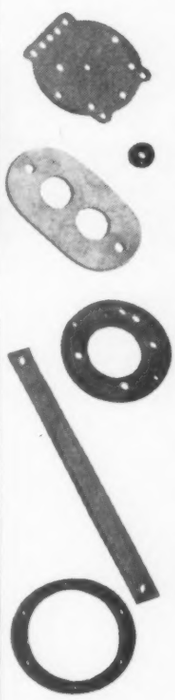

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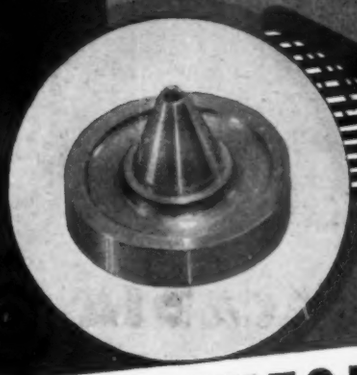

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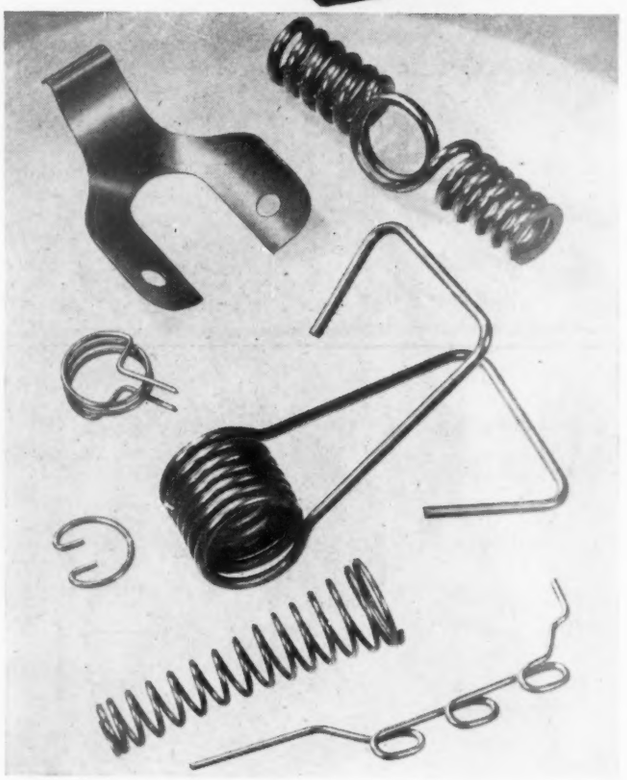

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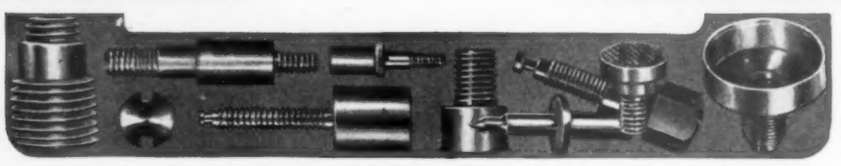

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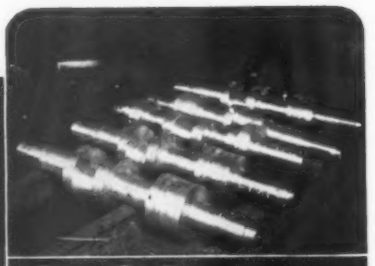

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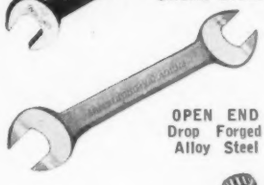

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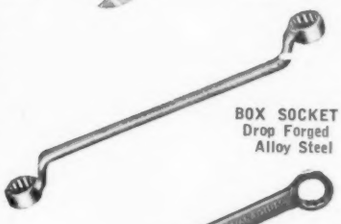

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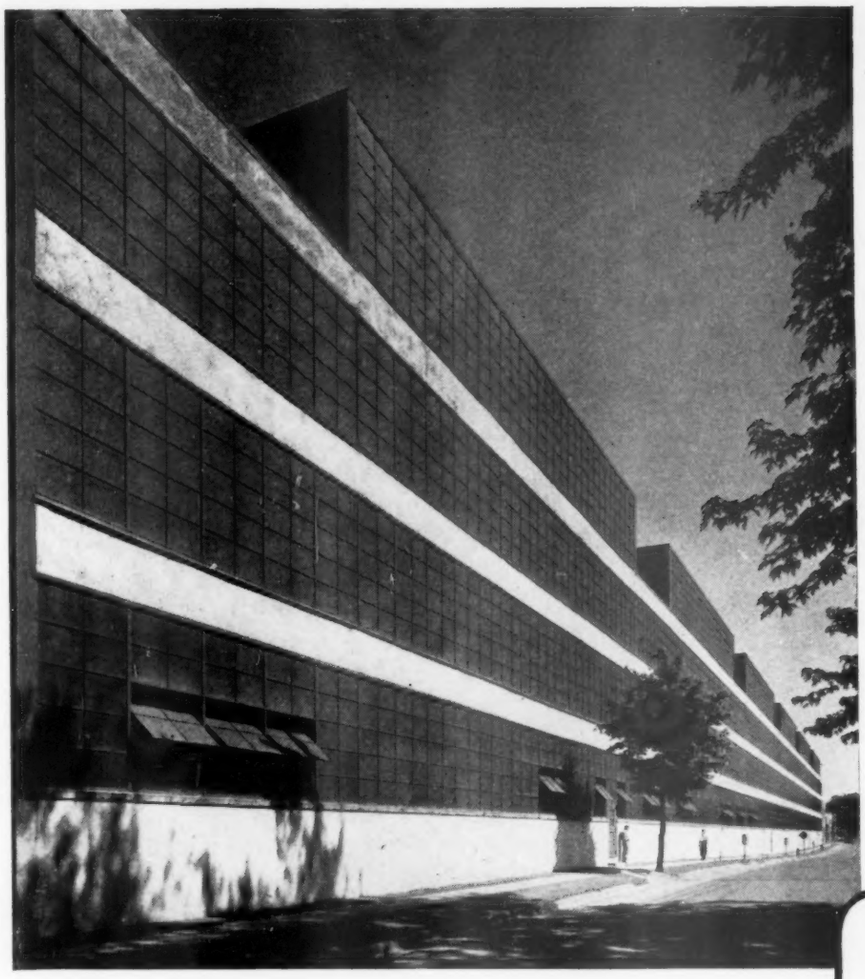

Plant designed by Albert Kahn Associated Architects & Engineers. (Hedrich-Blessing photo.)

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How to give precision workers abundant daylight *without* excessive sun glare and heat. That was the problem for the machine shop of the American Locomotive Company at Auburn, N.Y. Glazing the shop with *Frosted* AKLO provided the solution.

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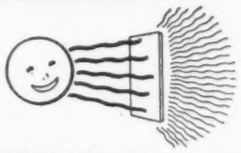
***Frosted* AKLO**



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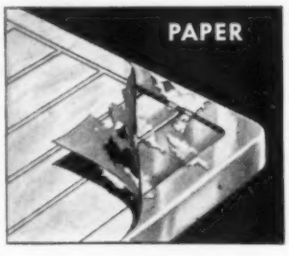

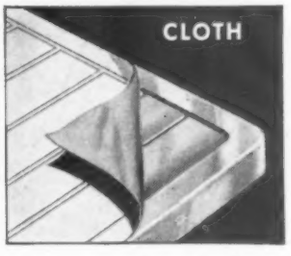

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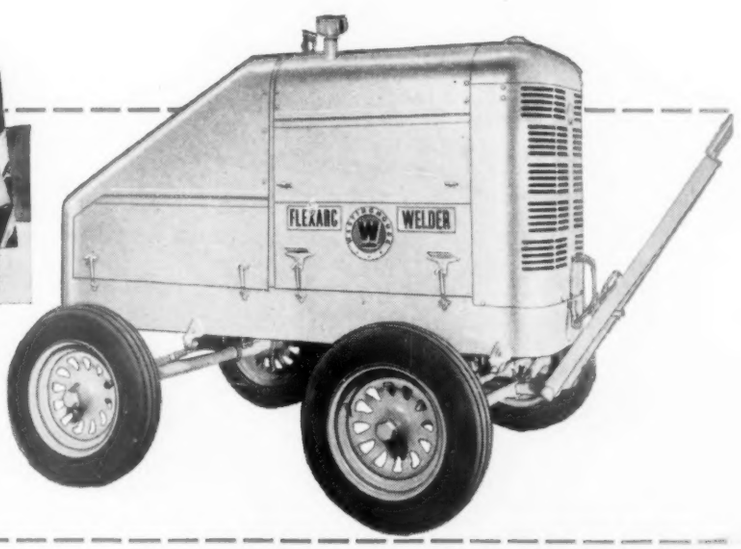

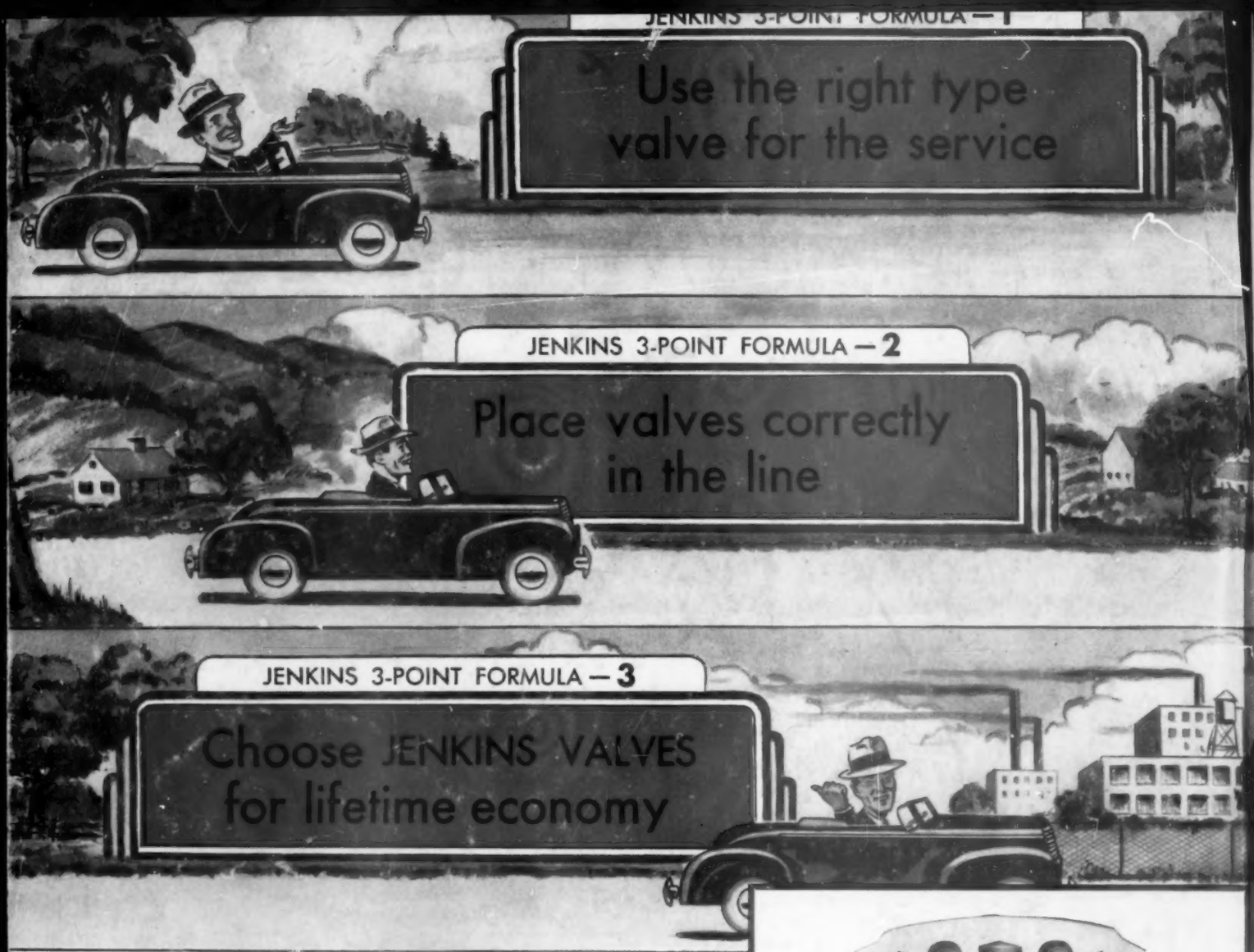
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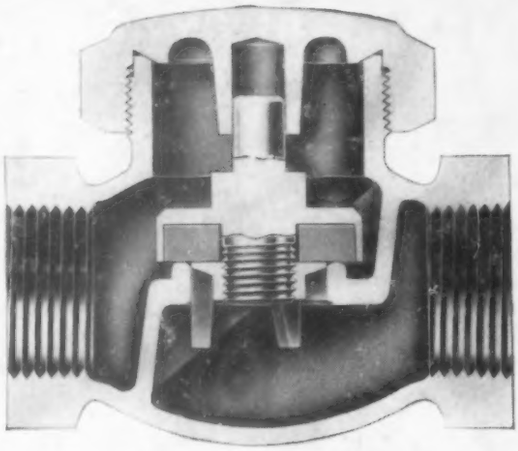

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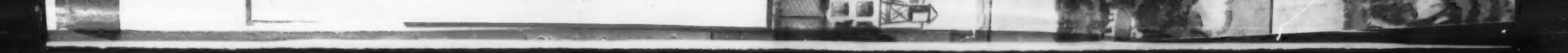
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